

FIG. 3

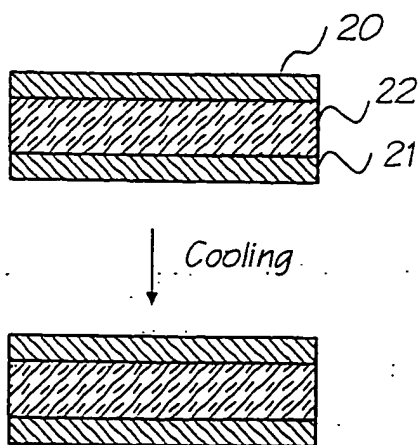


FIG. 4

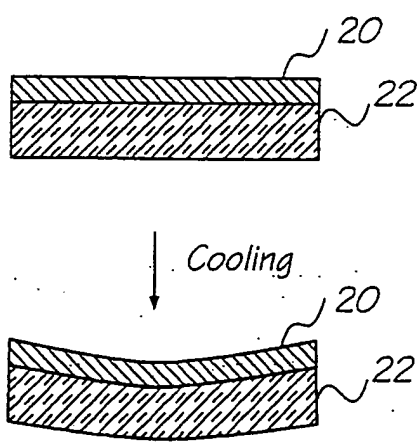


FIG. 5

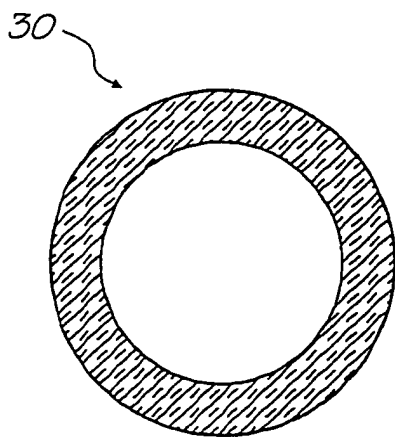


FIG. 6

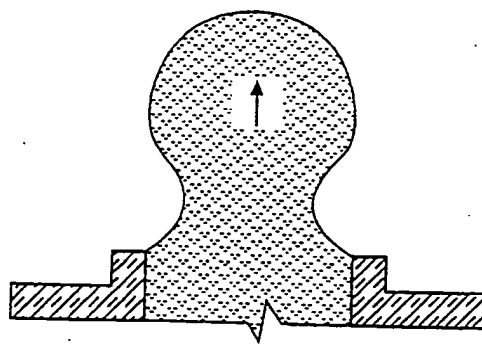


FIG. 7

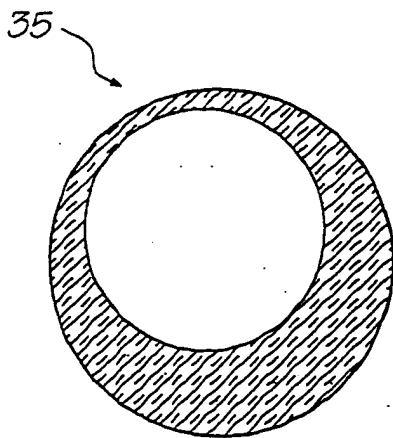


FIG. 8

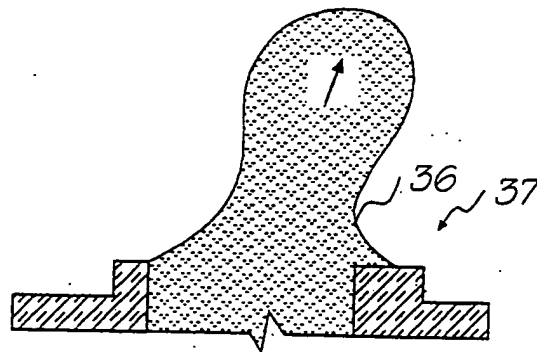


FIG. 9

FOOTPRINT

4/81

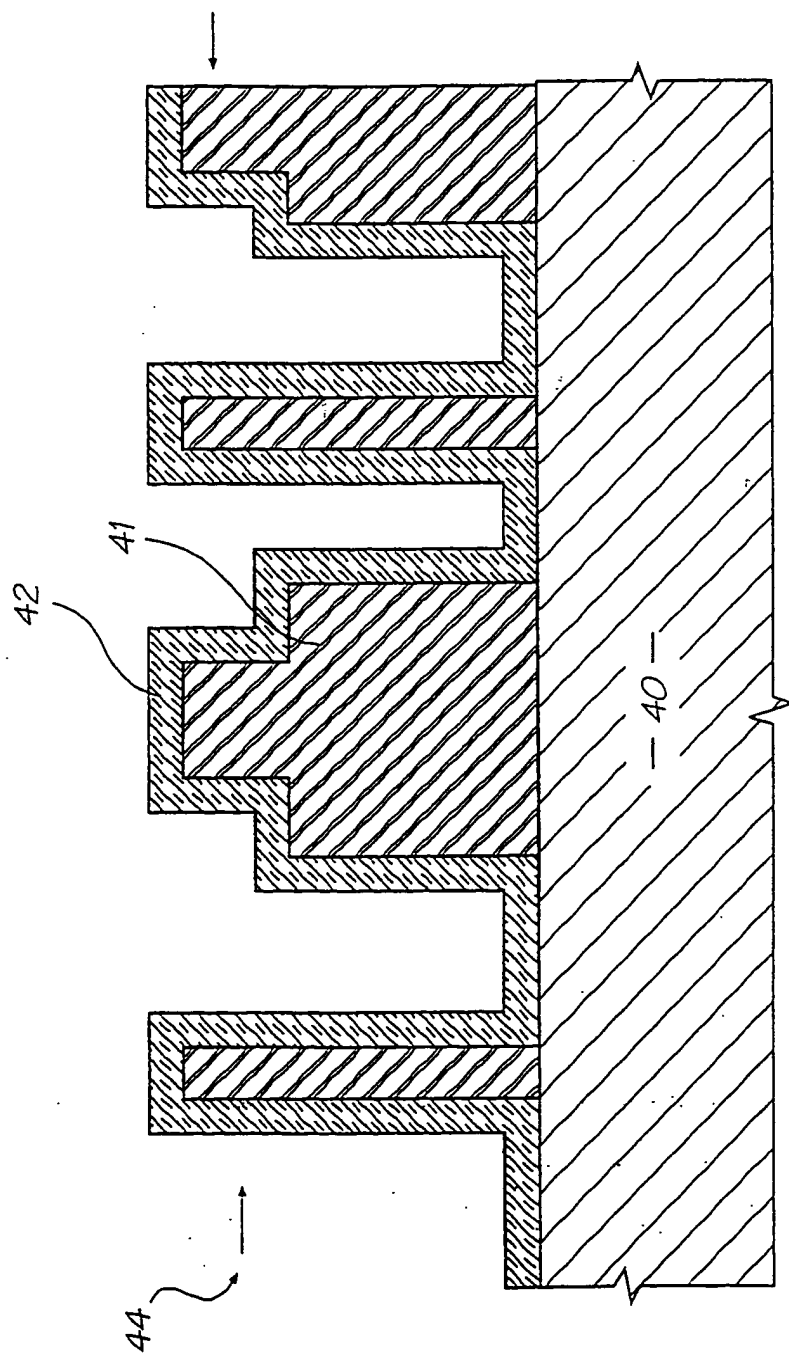


FIG. 10

FIG. 10

5/81

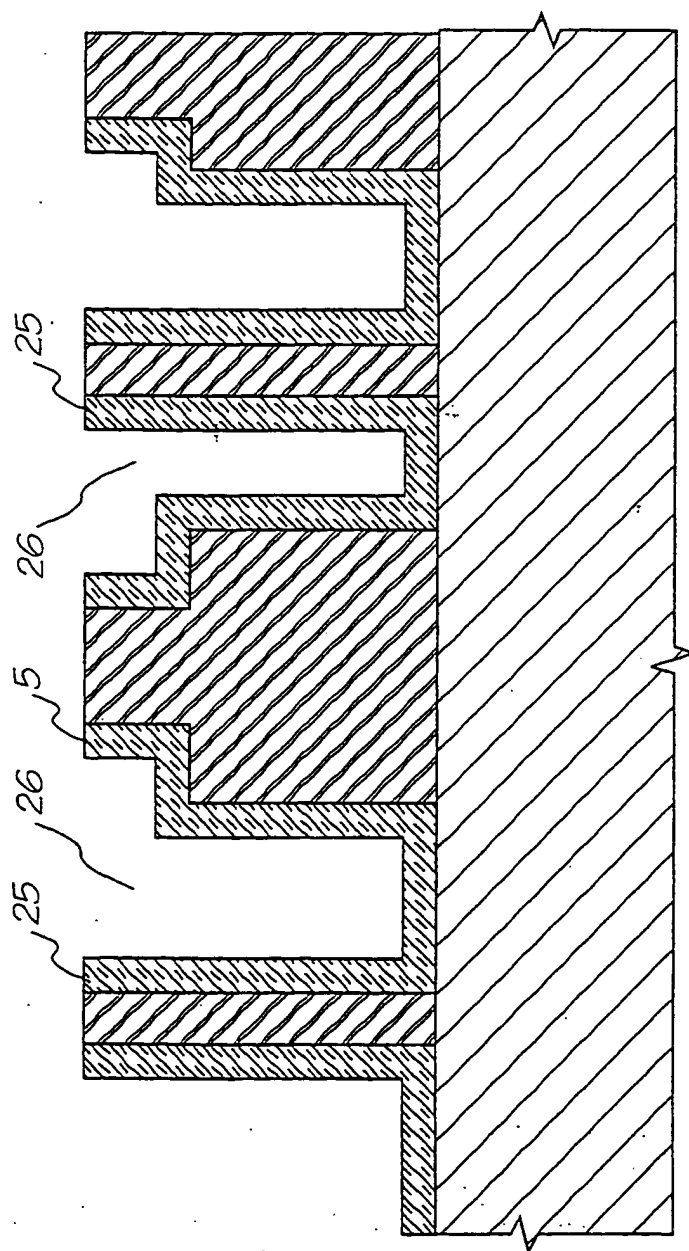


FIG. 11

FIG. 11

6/81

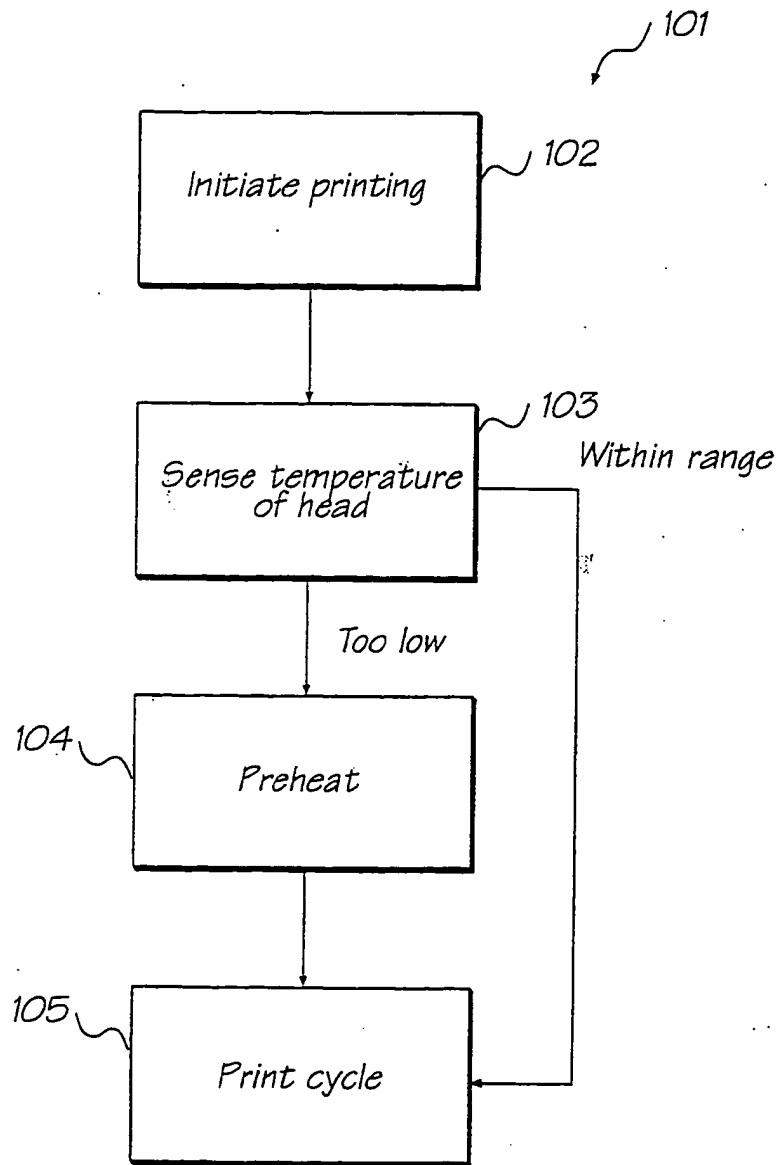


FIG. 12

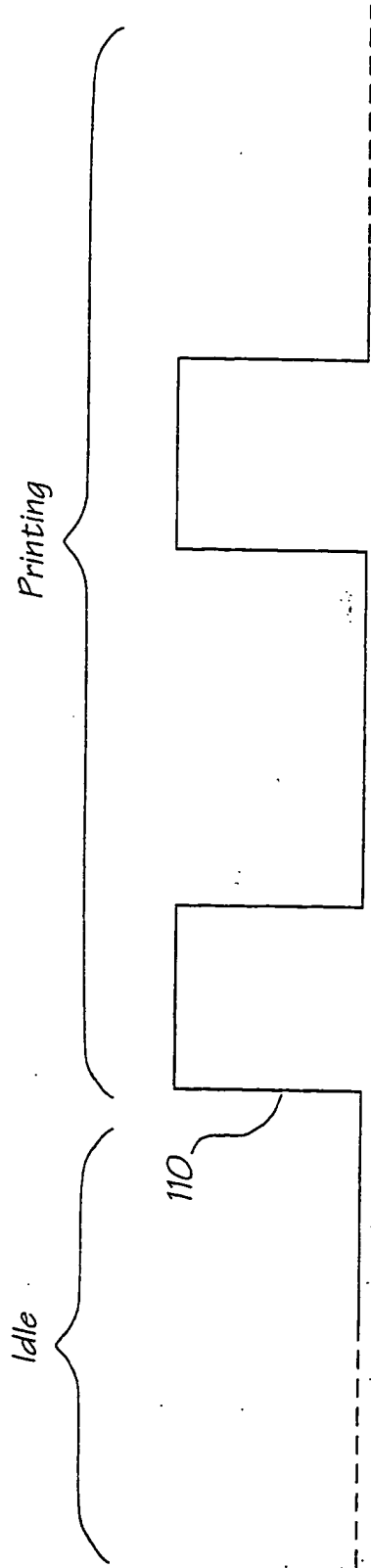


FIG. 13

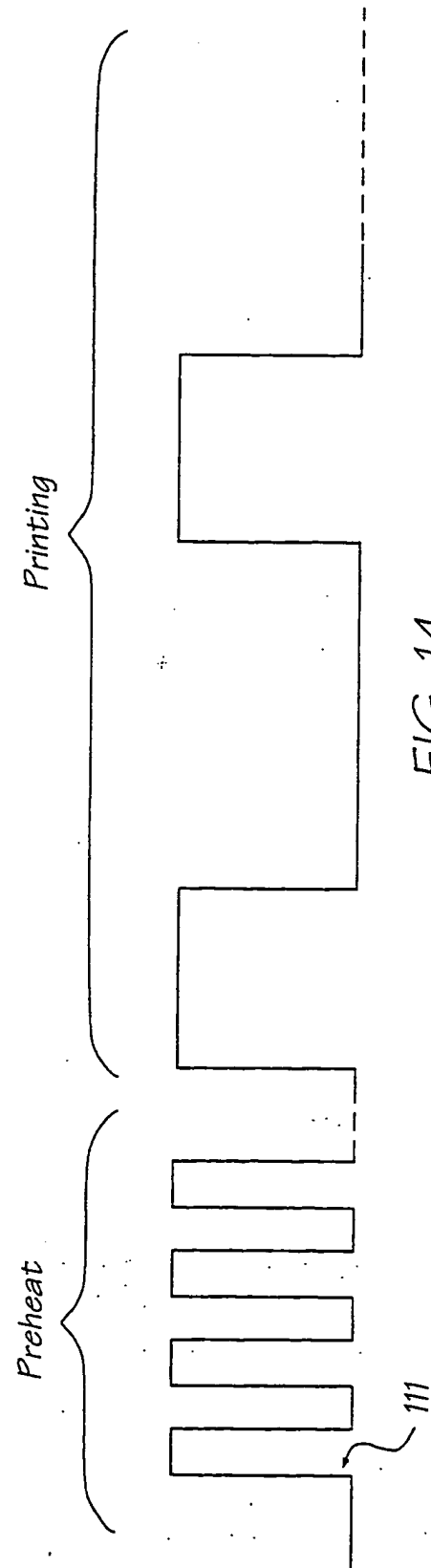


FIG. 14

8/81

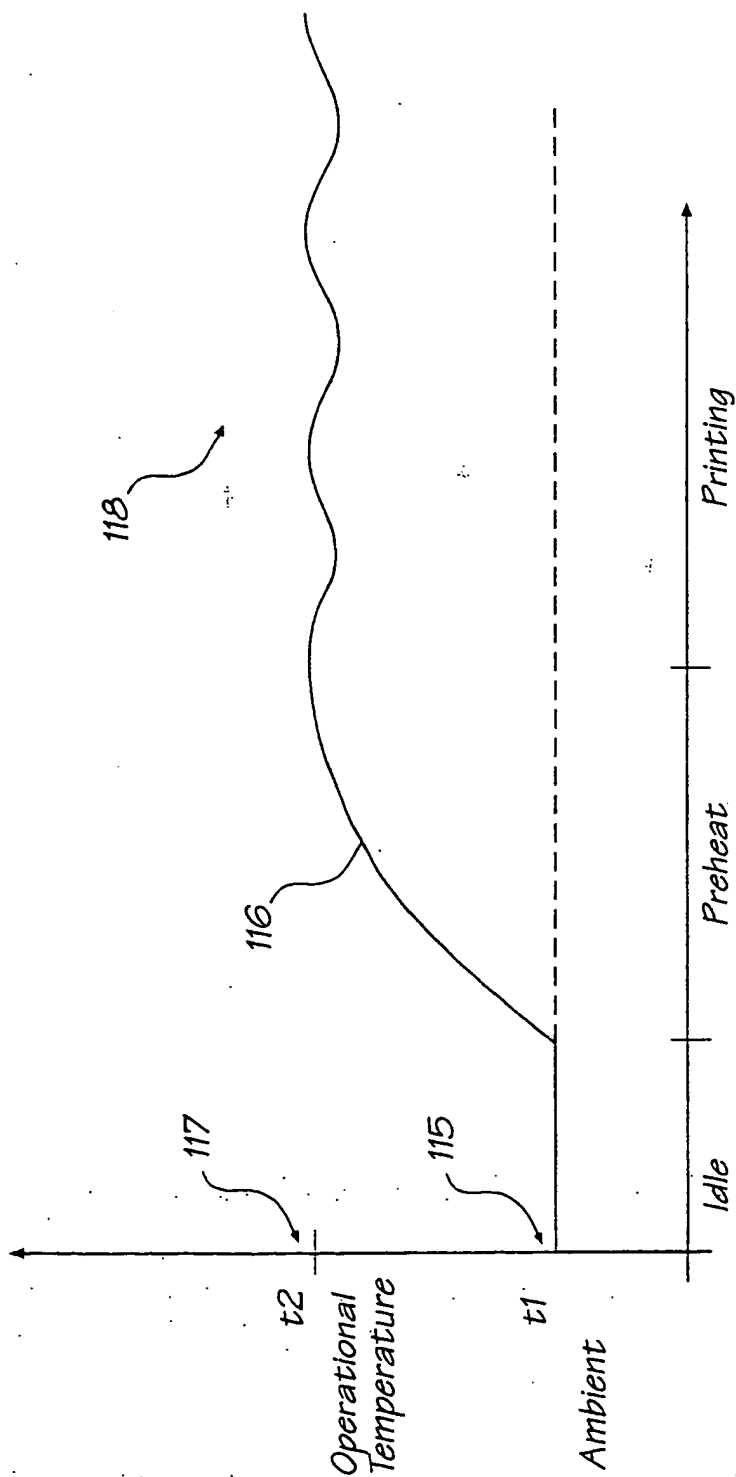


FIG. 15



9/81

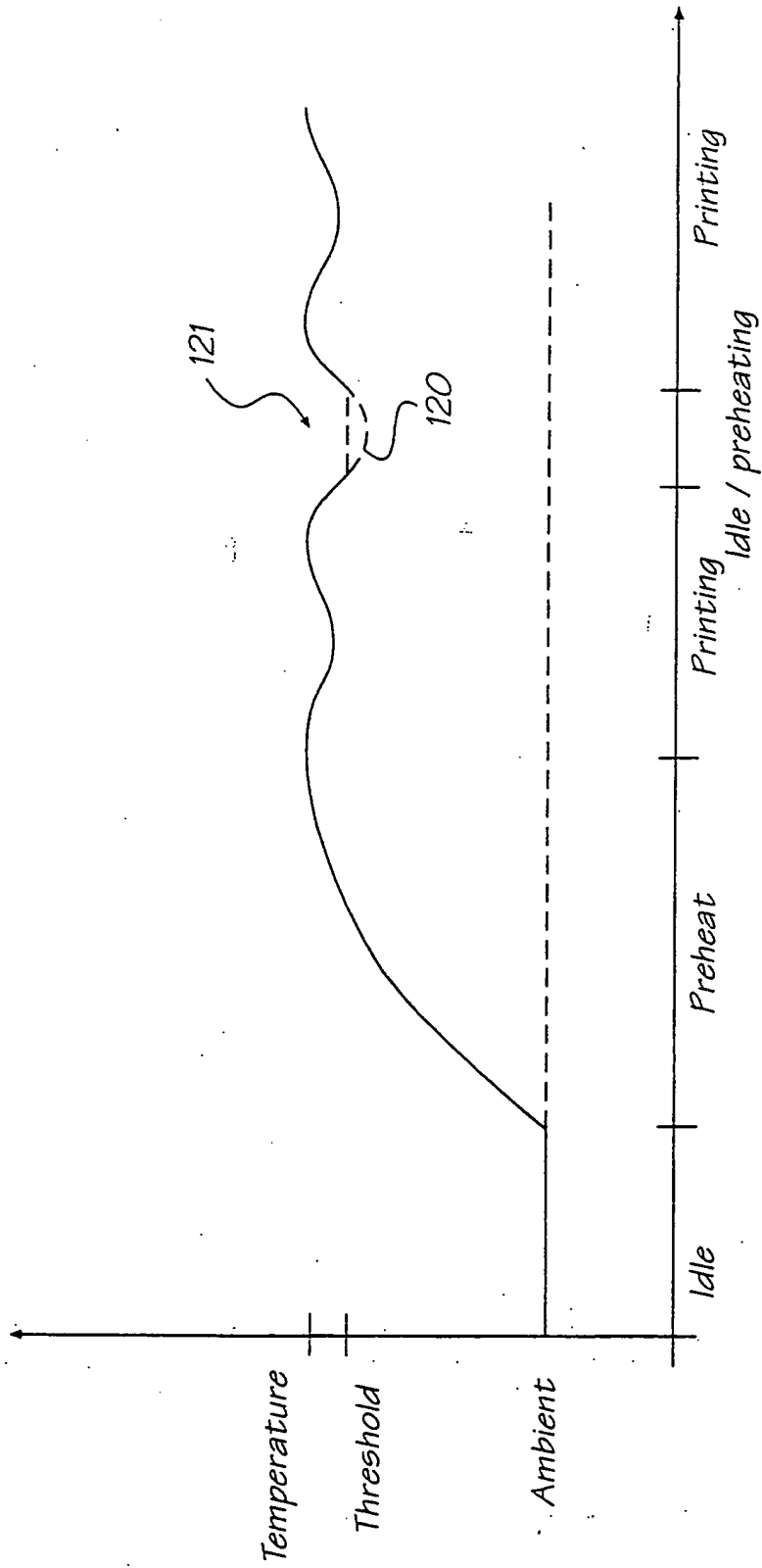


FIG. 16

10/81

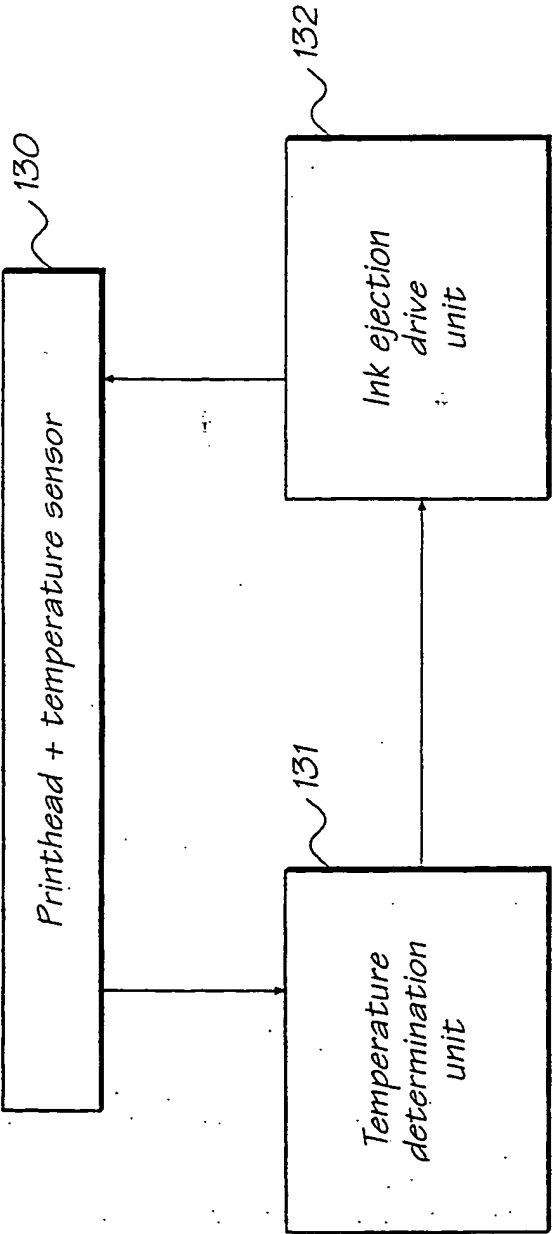


FIG. 17

FIG. 17

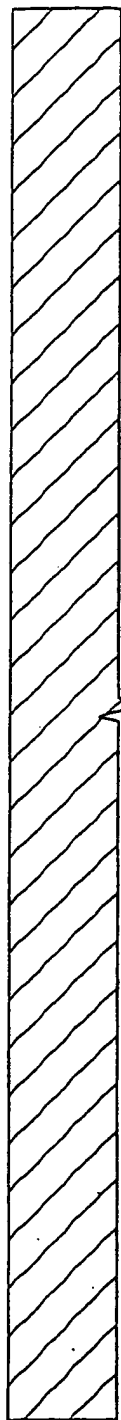
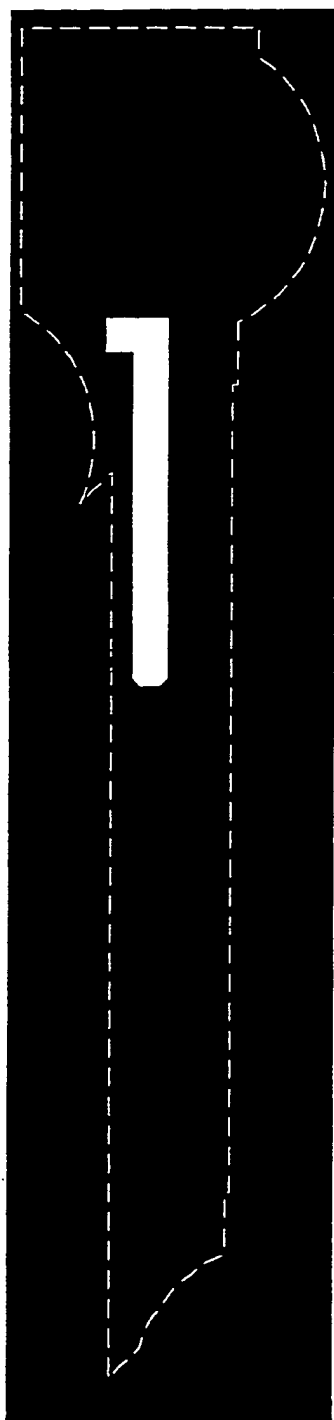


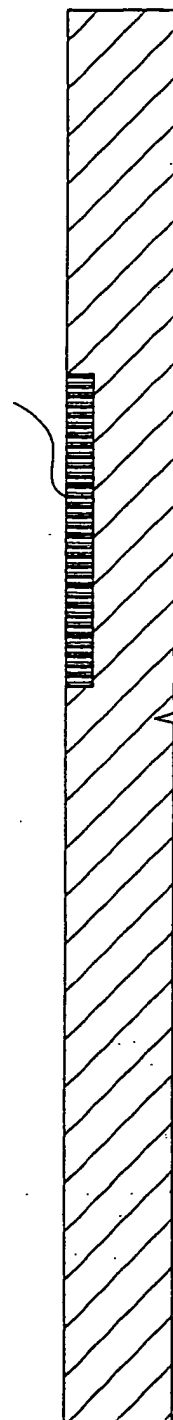
FIG. 18



N-Well mask

FIG. 19

210



Implant N-Well

FIG. 20

12/81

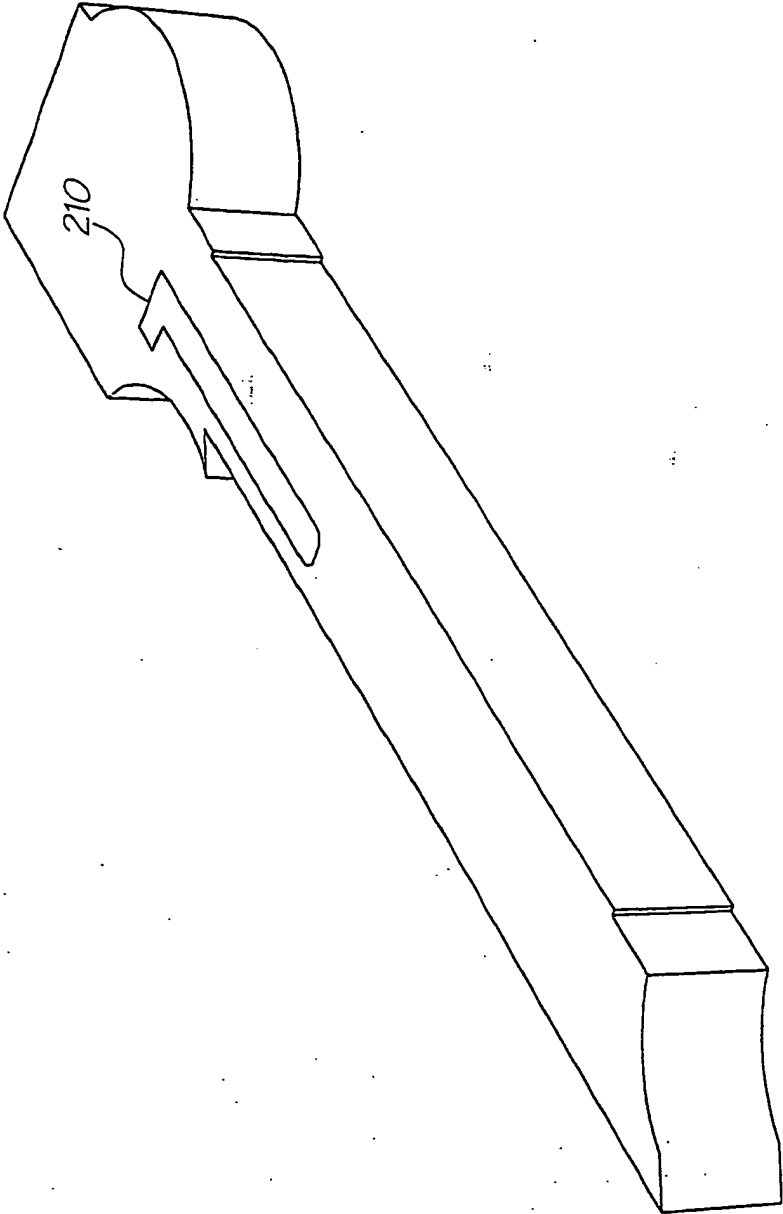
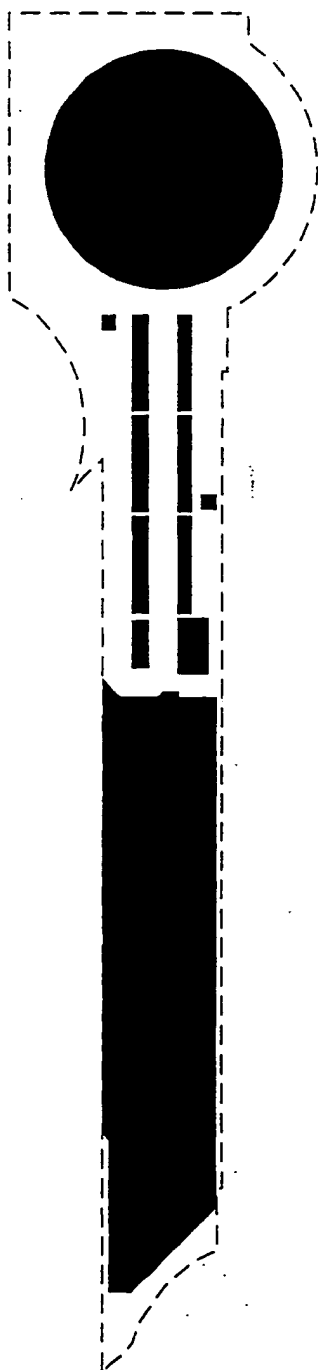


FIG. 21

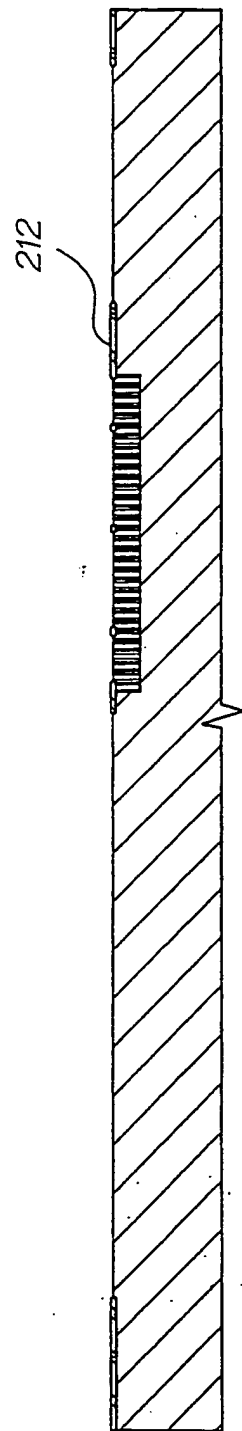
FIG. 21

13/81



Active mask

FIG. 22



Grow field oxide

FIG. 23

14/81

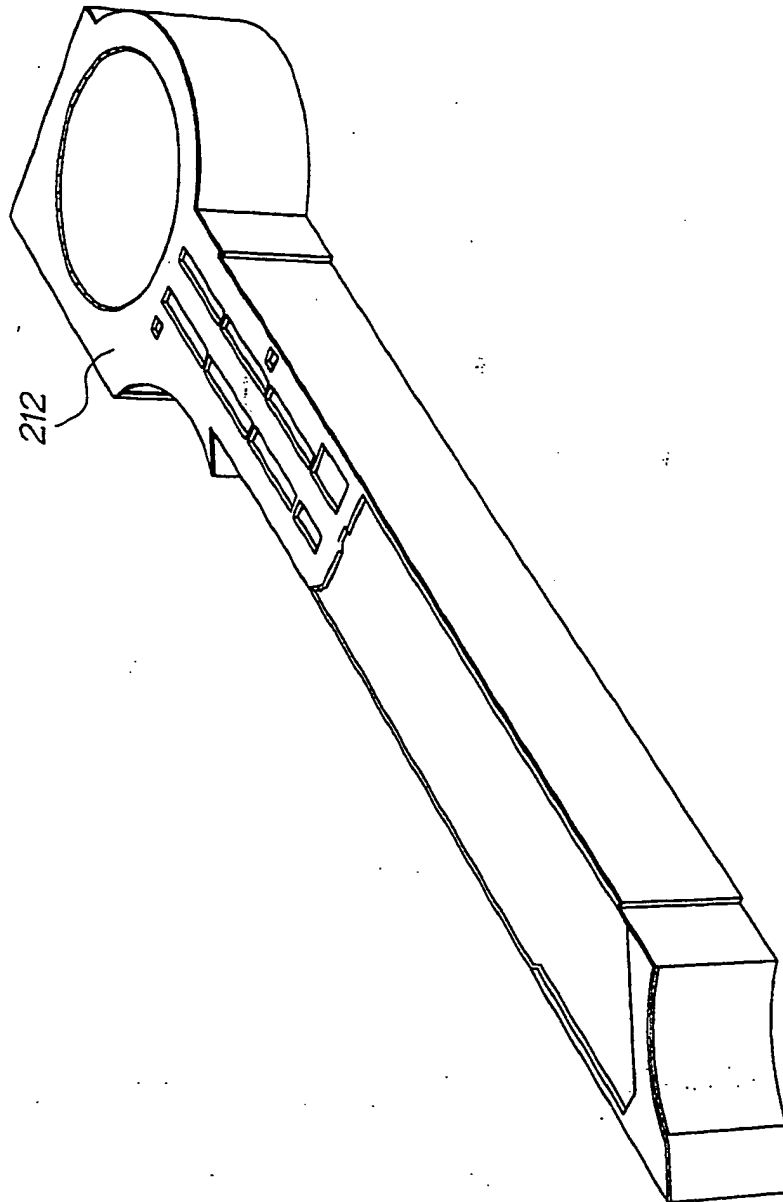
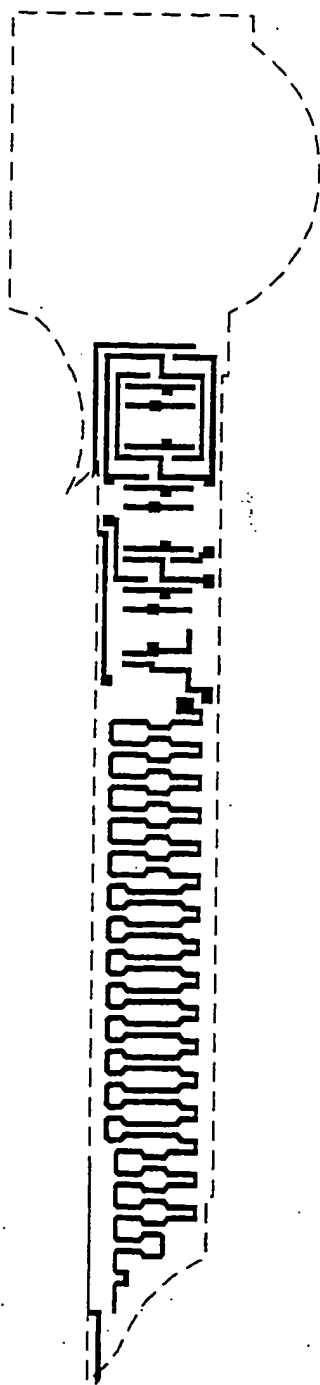


FIG. 24

FIG. 24

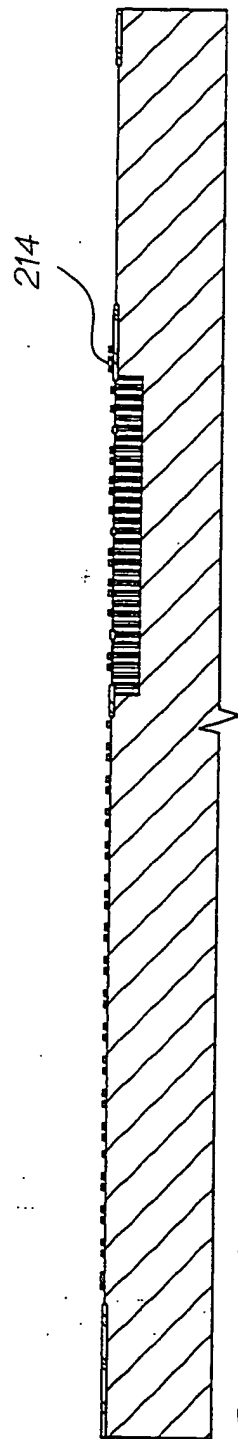
15/81

FIG. 24



Poly mask

FIG. 25



Deposit poly

FIG. 26

16/81

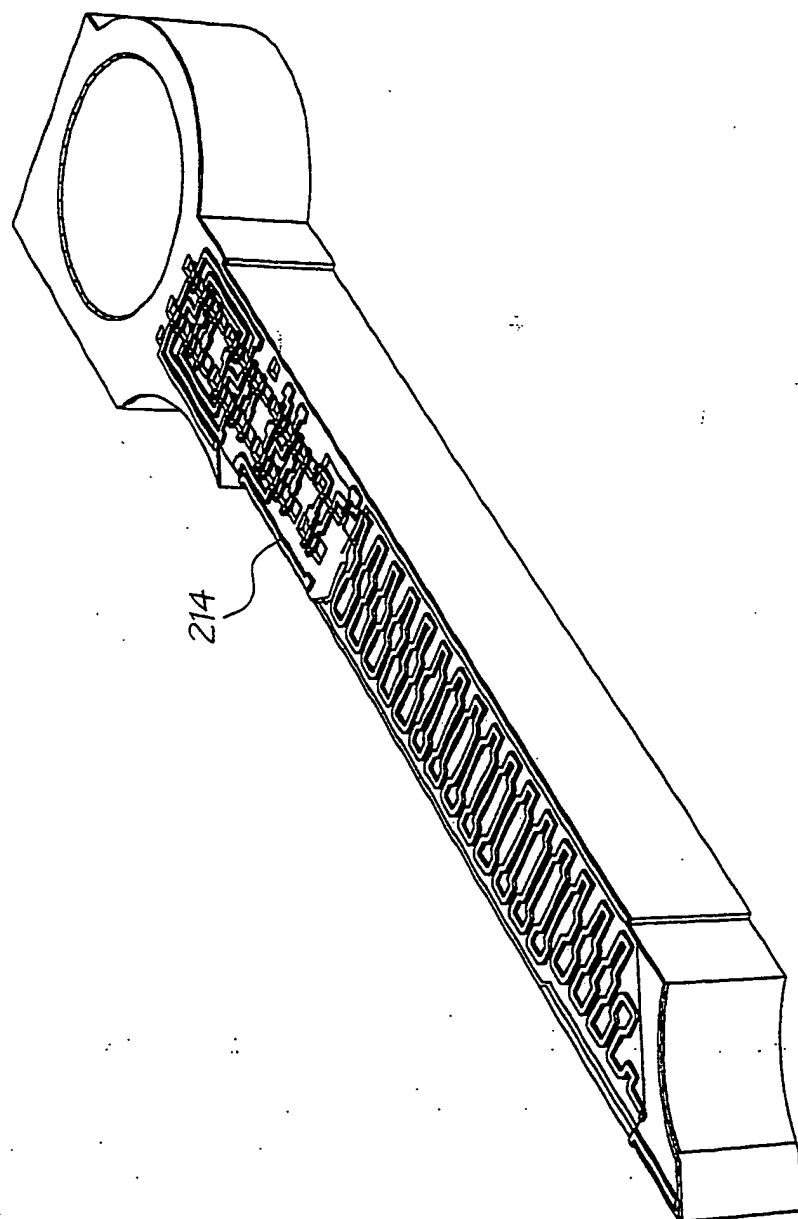
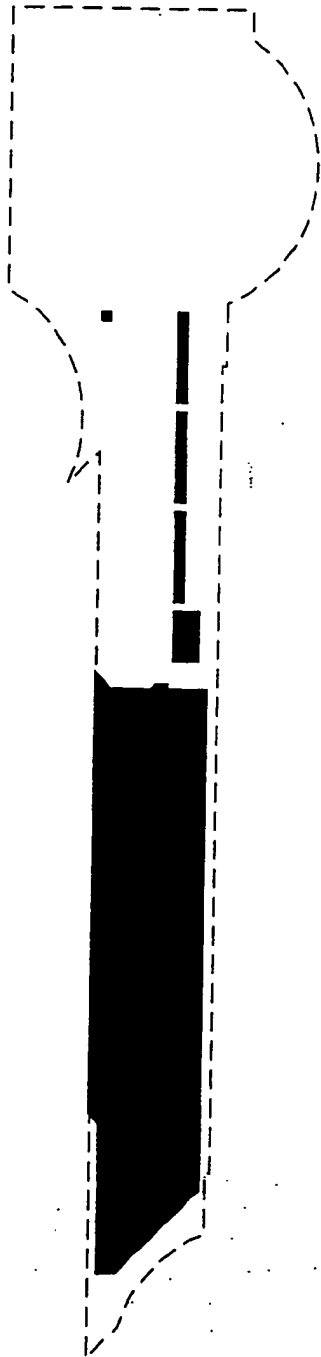


FIG. 27



17/81

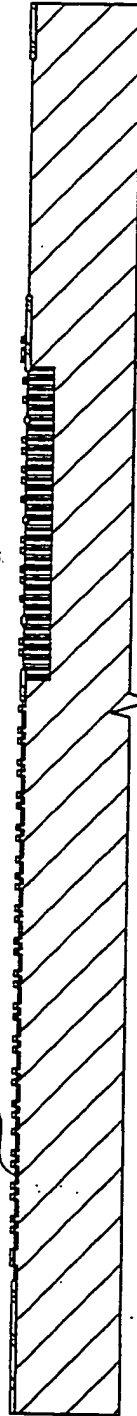
FIG. 28



n+ mask

FIG. 28

216



n+ implant

FIG. 29

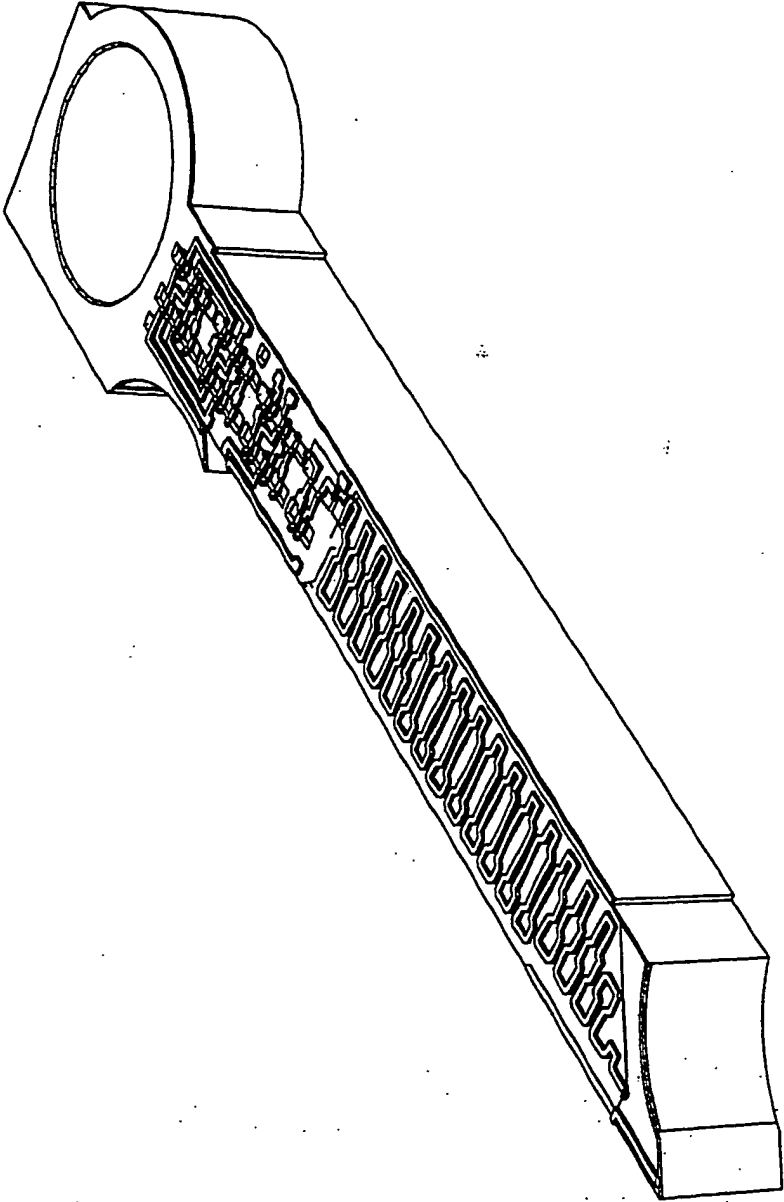
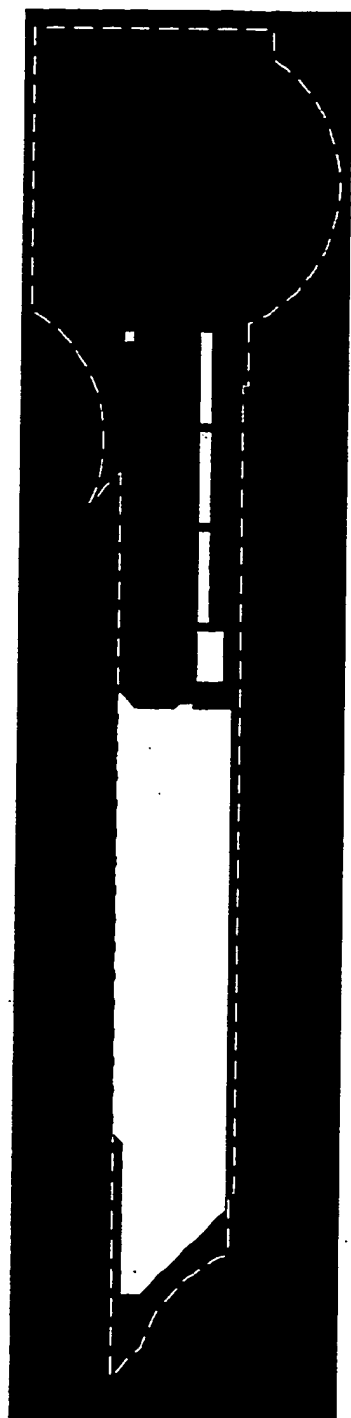


FIG. 30

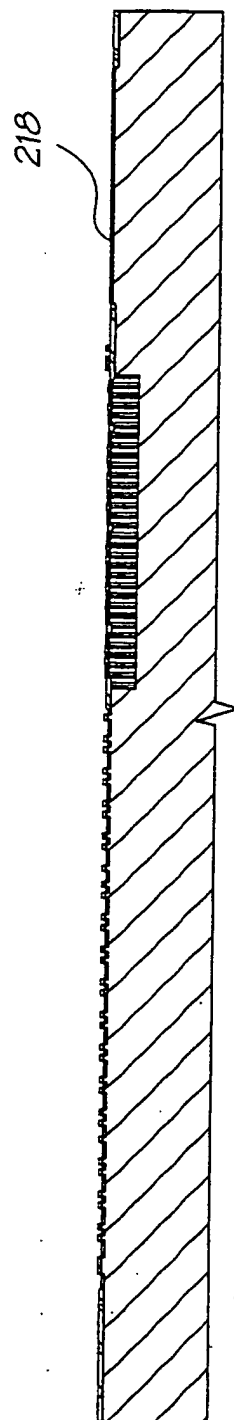
FIG. 30

19/81



p+ mask

FIG. 31



p+ implant

FIG. 32

218

20/81

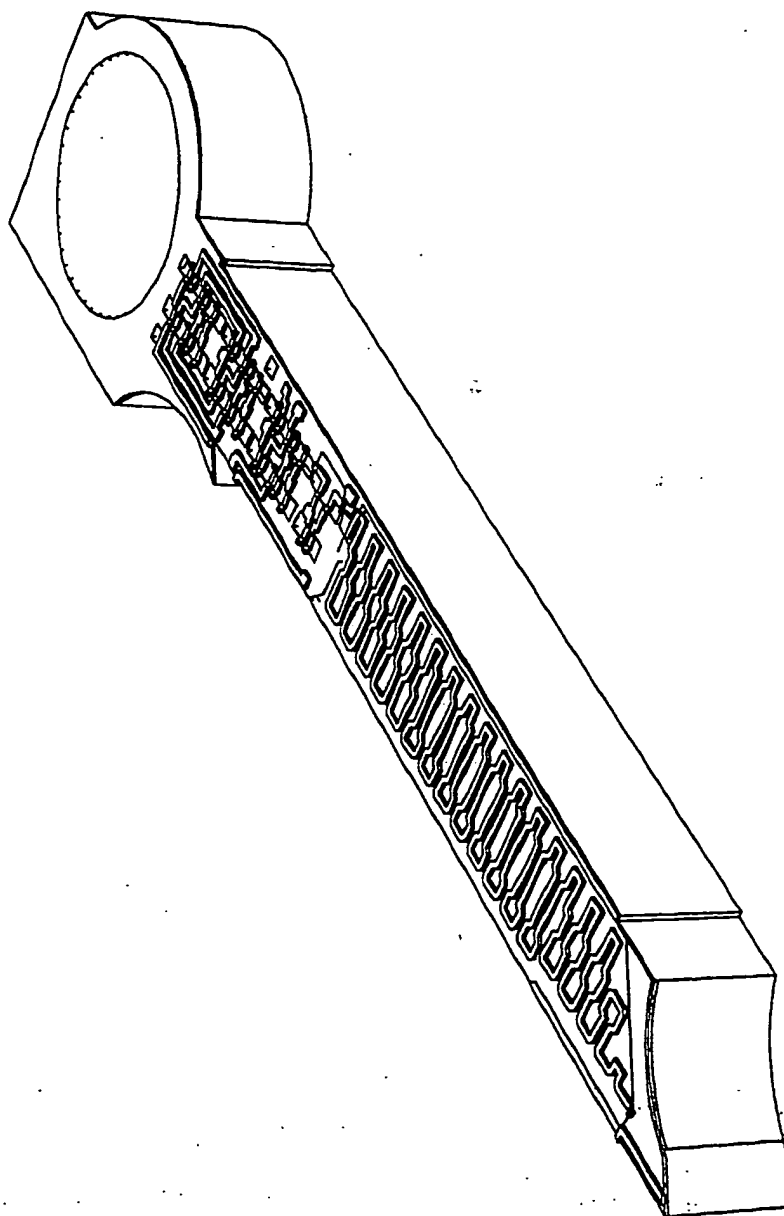
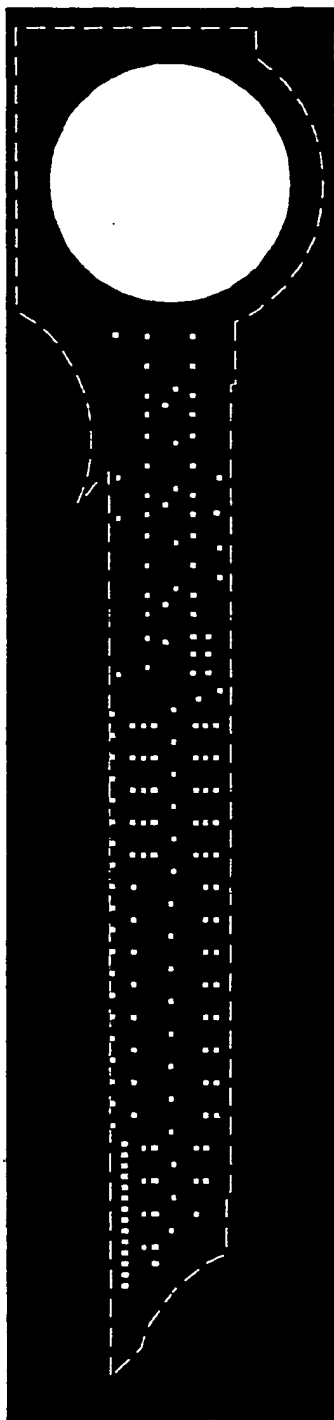


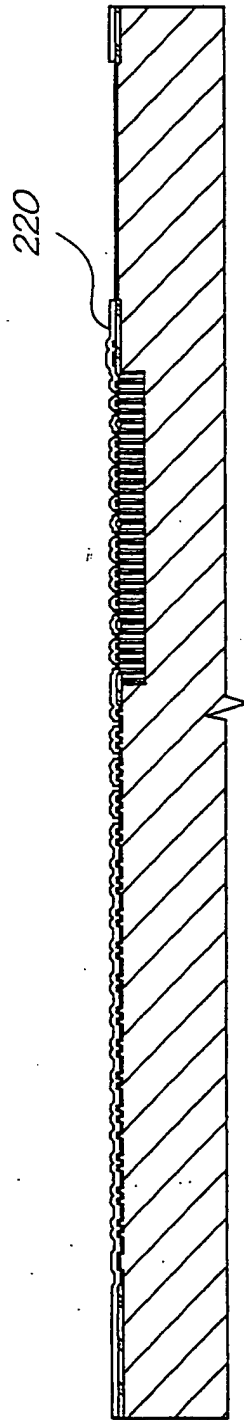
FIG. 33

FIG. 33



Contacts mask

FIG. 34



Deposit ILD 1, etch contacts

FIG. 35

22/81

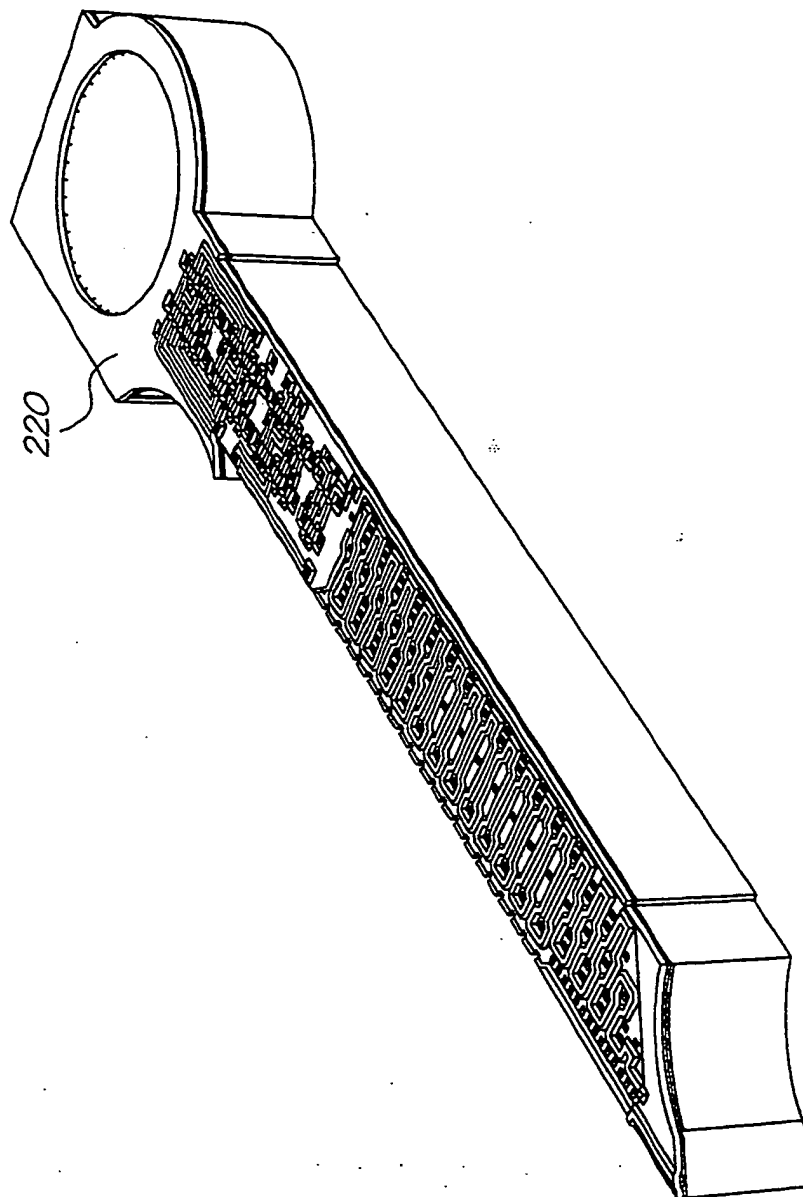
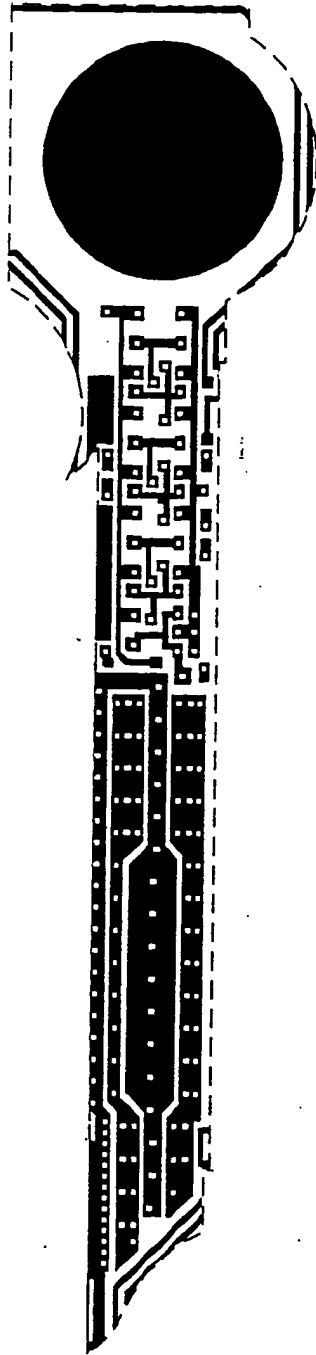


FIG. 36

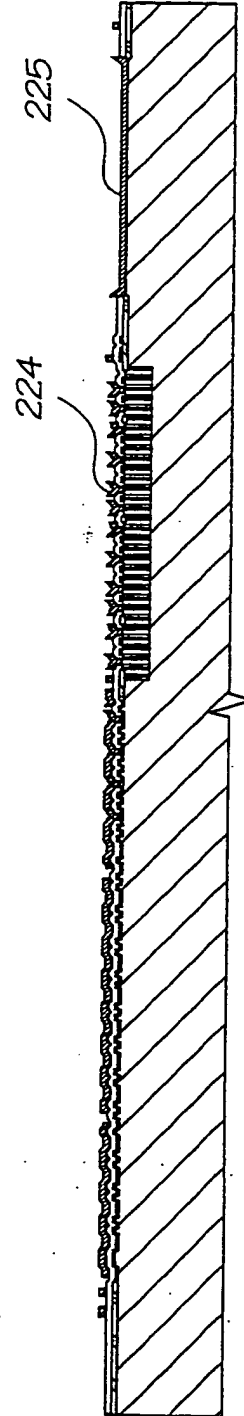
FIG. 36

23/81



Metal 1 mask

FIG. 37



Deposit Metal 1

FIG. 38

24/81

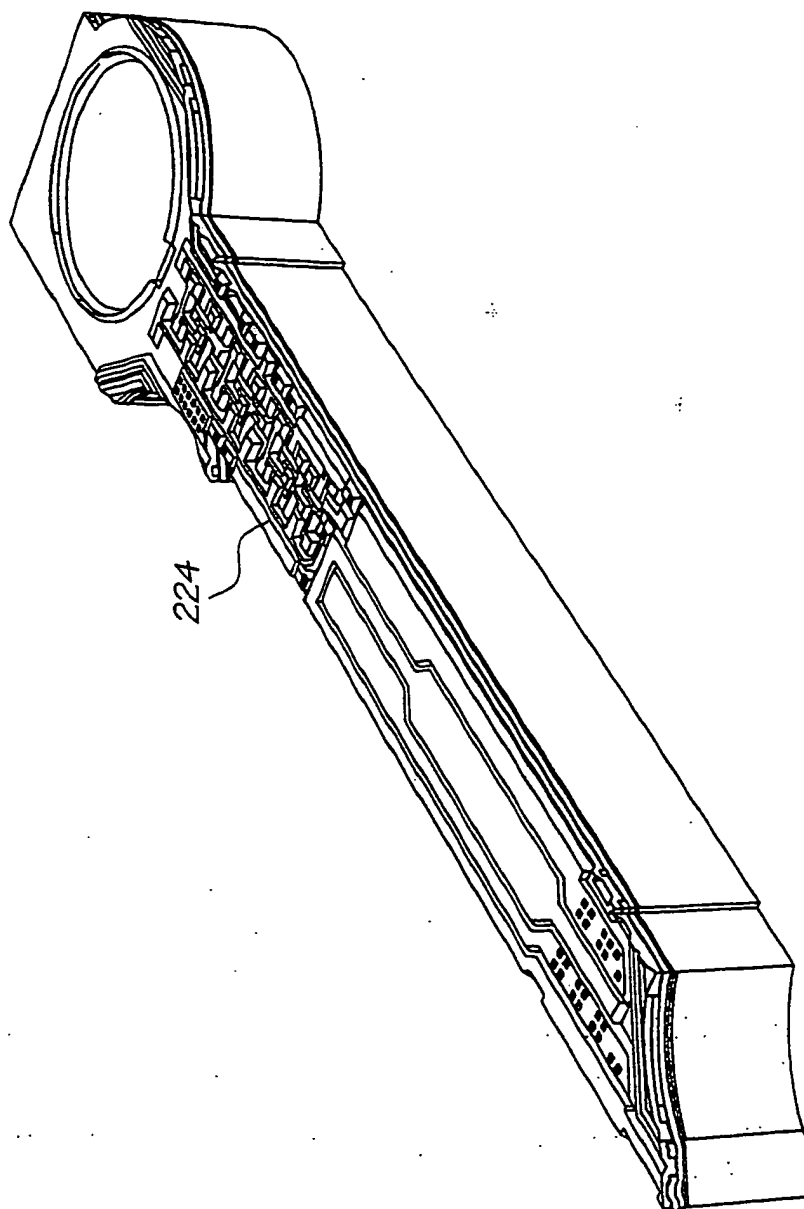


FIG. 39

FIG. 39



FIG. 40

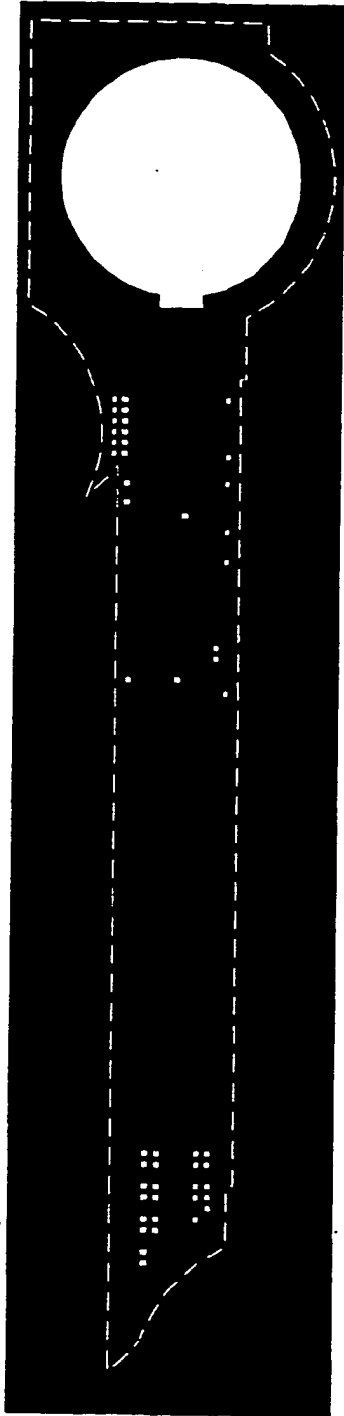


FIG. 40

228

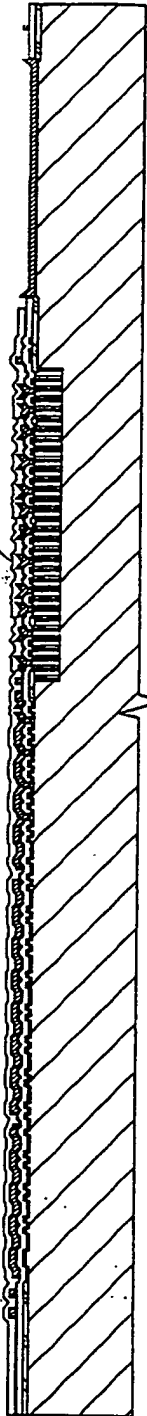
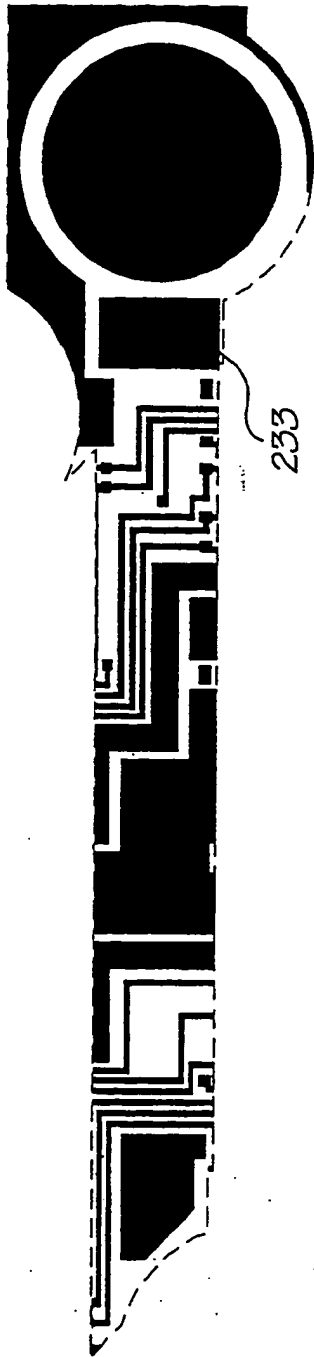
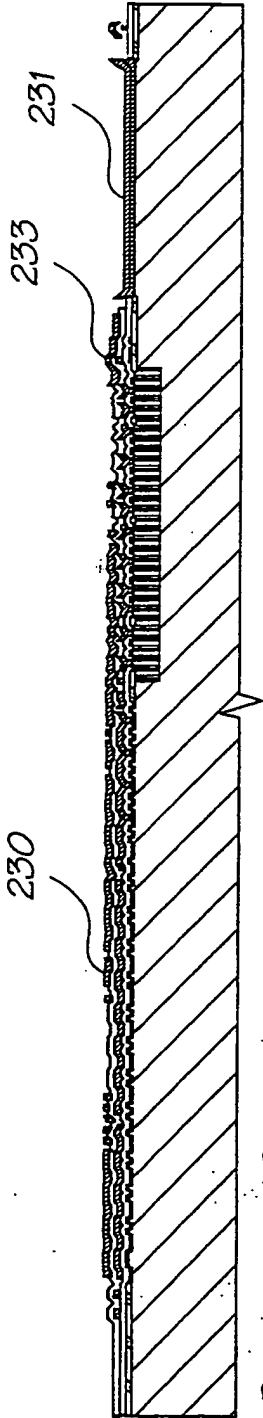


FIG. 41



Metal 2 mask

FIG. 42



Deposit metal 2

FIG. 43

27/81

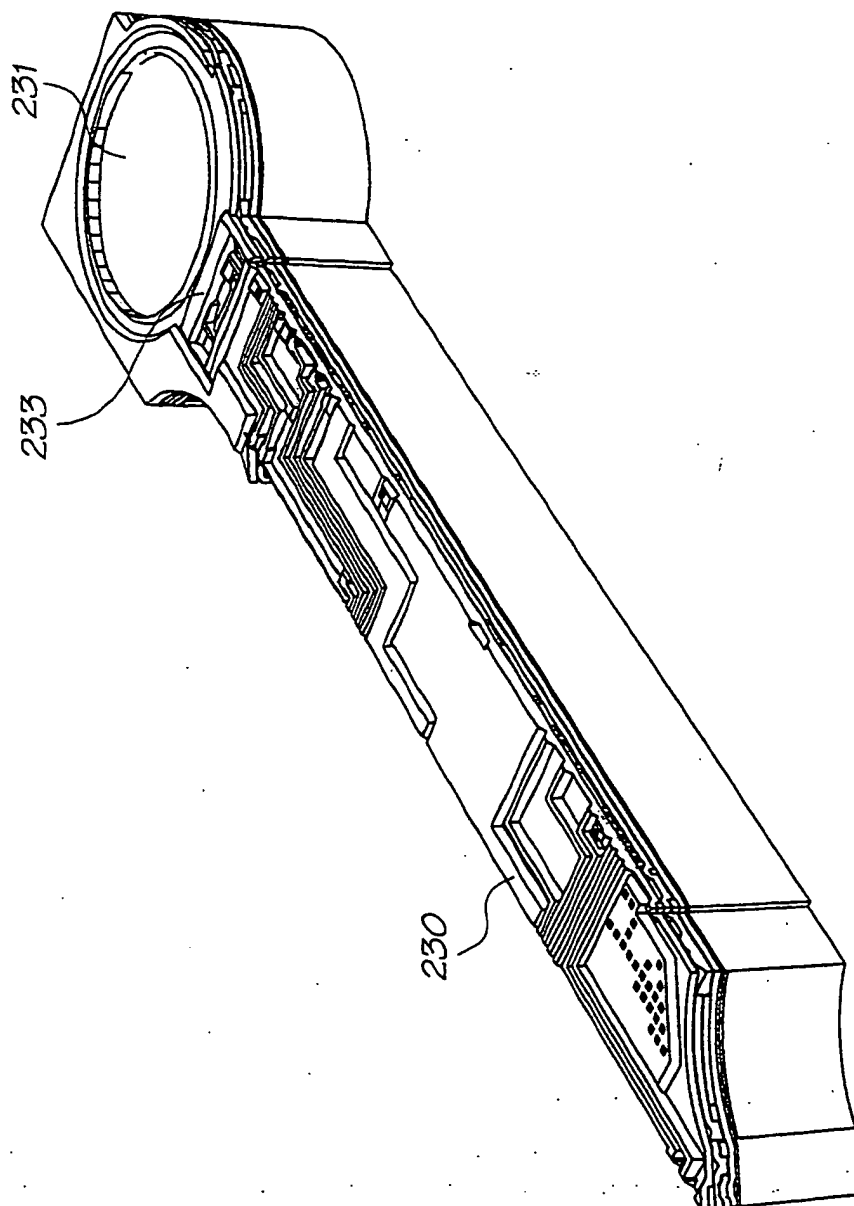
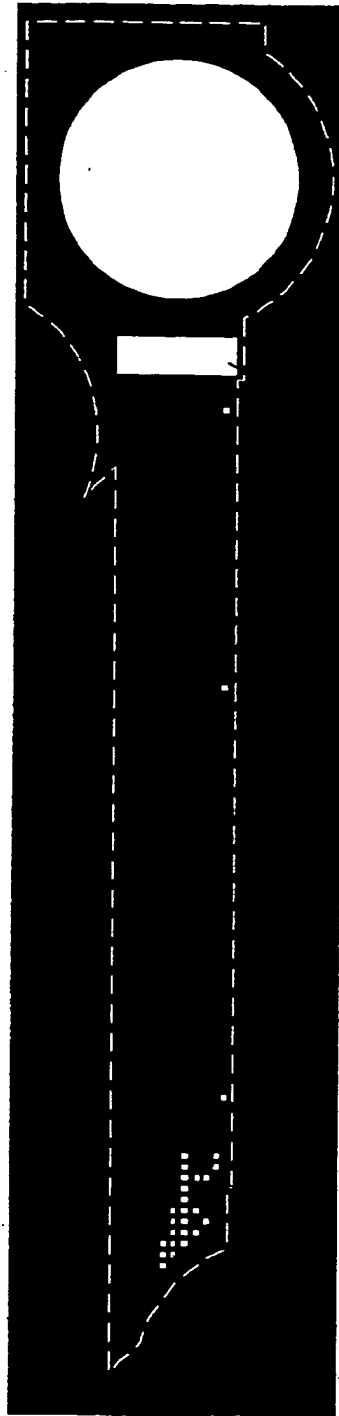


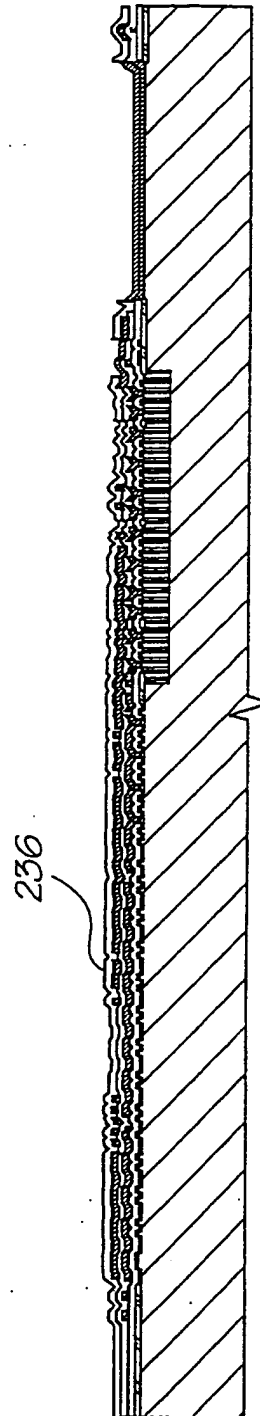
FIG. 44

28/81



Via 2 mask

FIG. 45



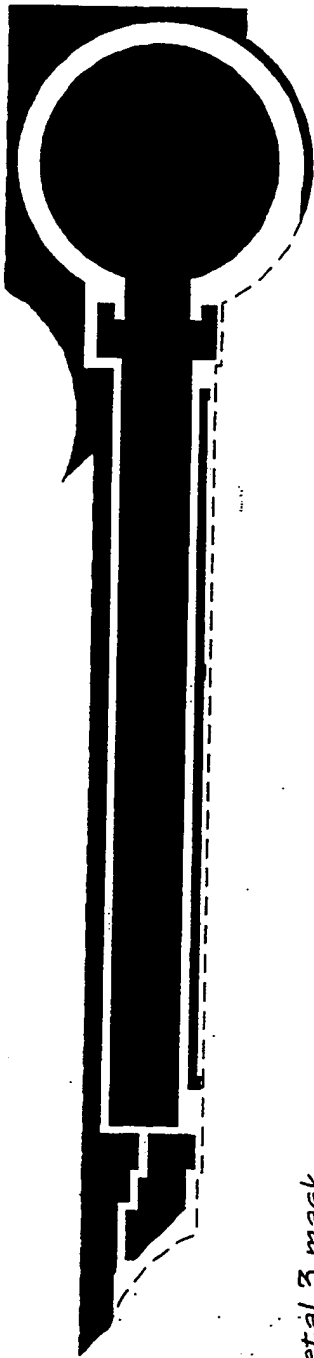
Deposit ILD 3, etch vias

FIG. 46

FIG. 45

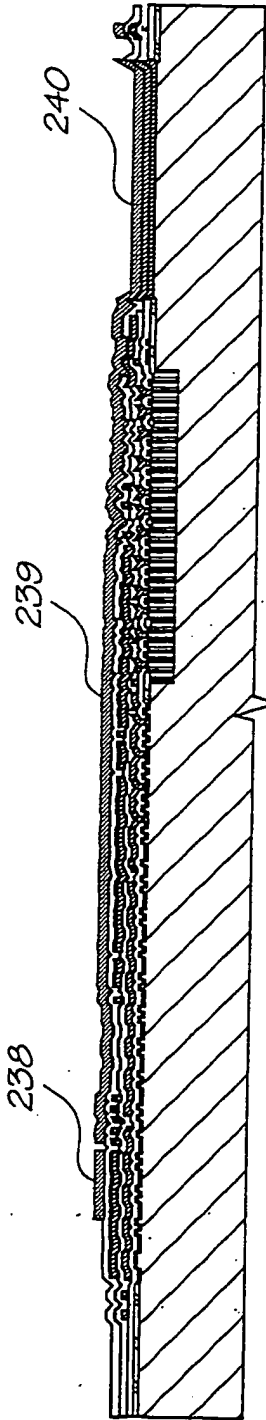
29/81

FIG. 47



Metal 3 mask

FIG. 47



Deposit metal 3

FIG. 48

30/81

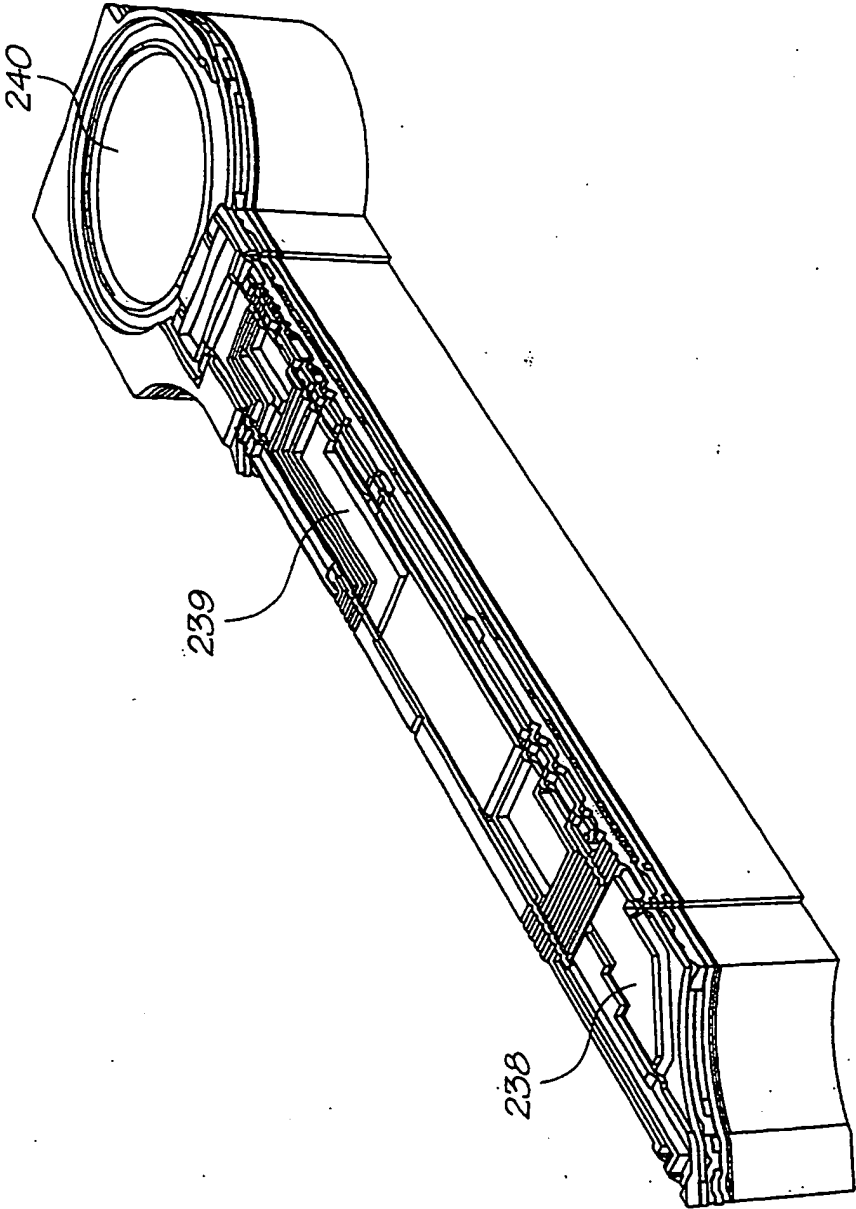
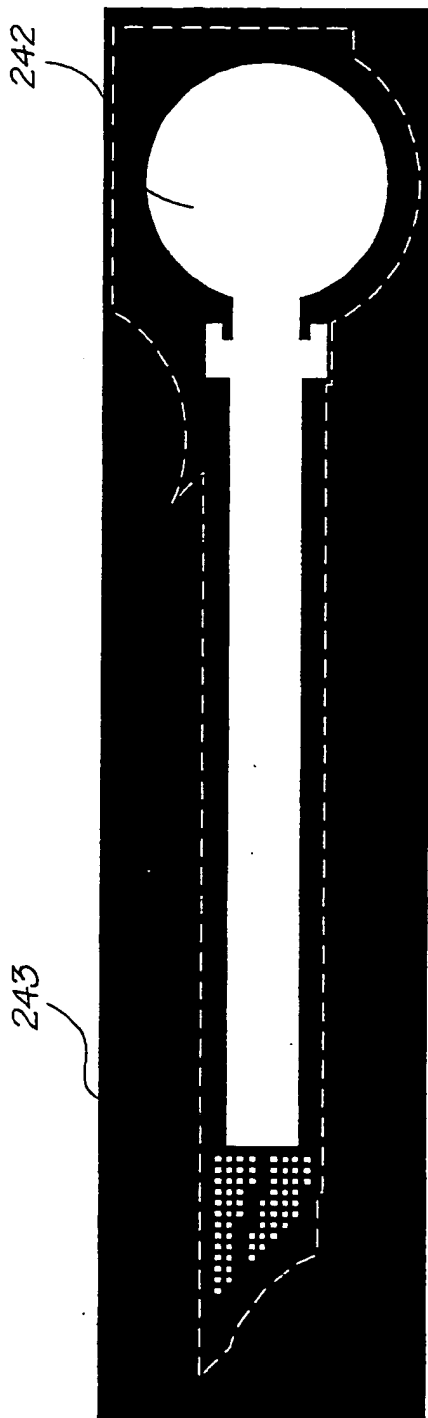


FIG. 49

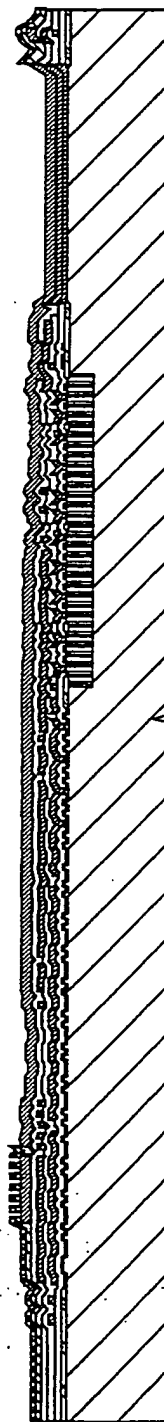
FIG. 49

31/81



Via 3 / Passivation mask

FIG. 50



Deposit passivation oxide & nitride, etch vias

FIG. 51

32/81

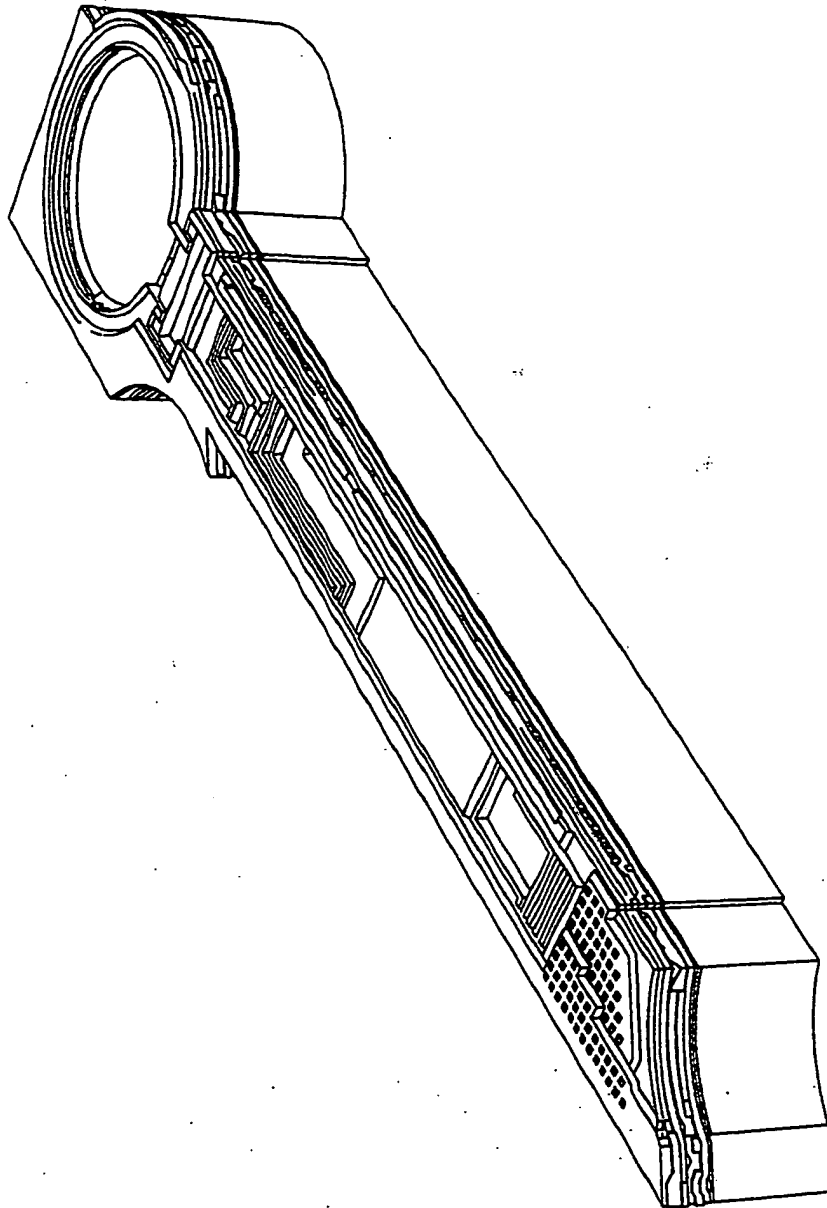
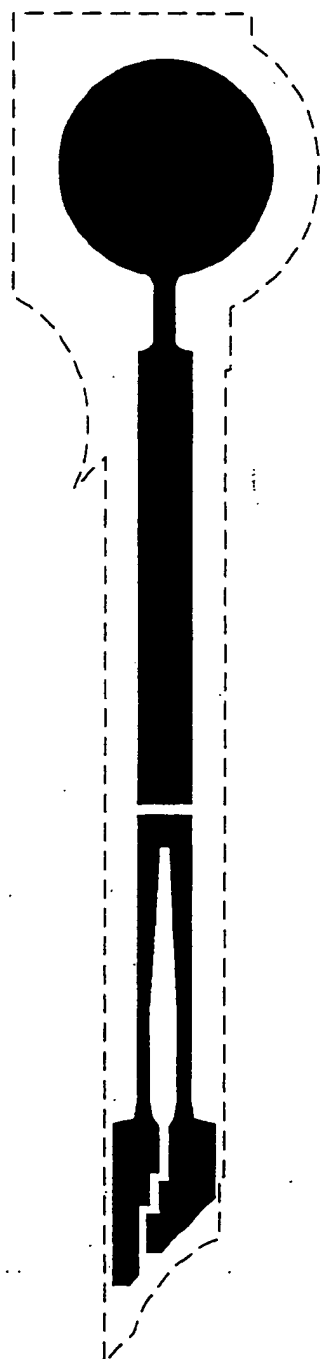


FIG. 52

FIG. 52

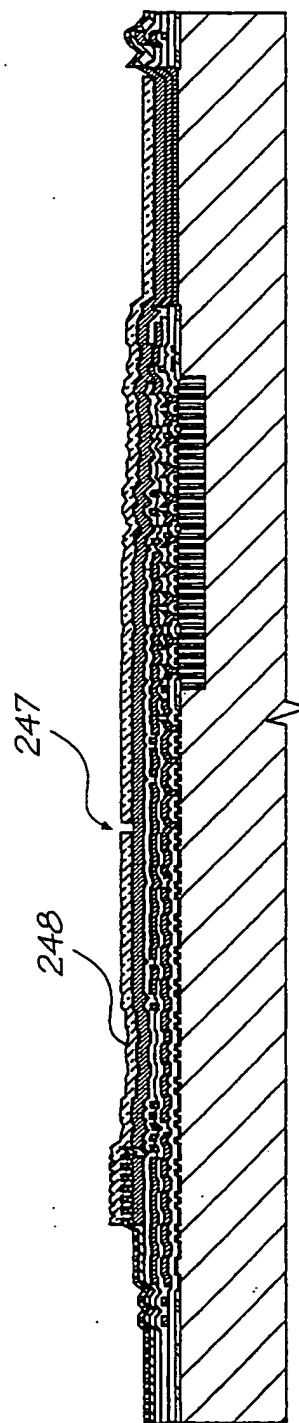


33/81



Heater mask

FIG. 53



Deposit heater TiN

FIG. 54

34/81

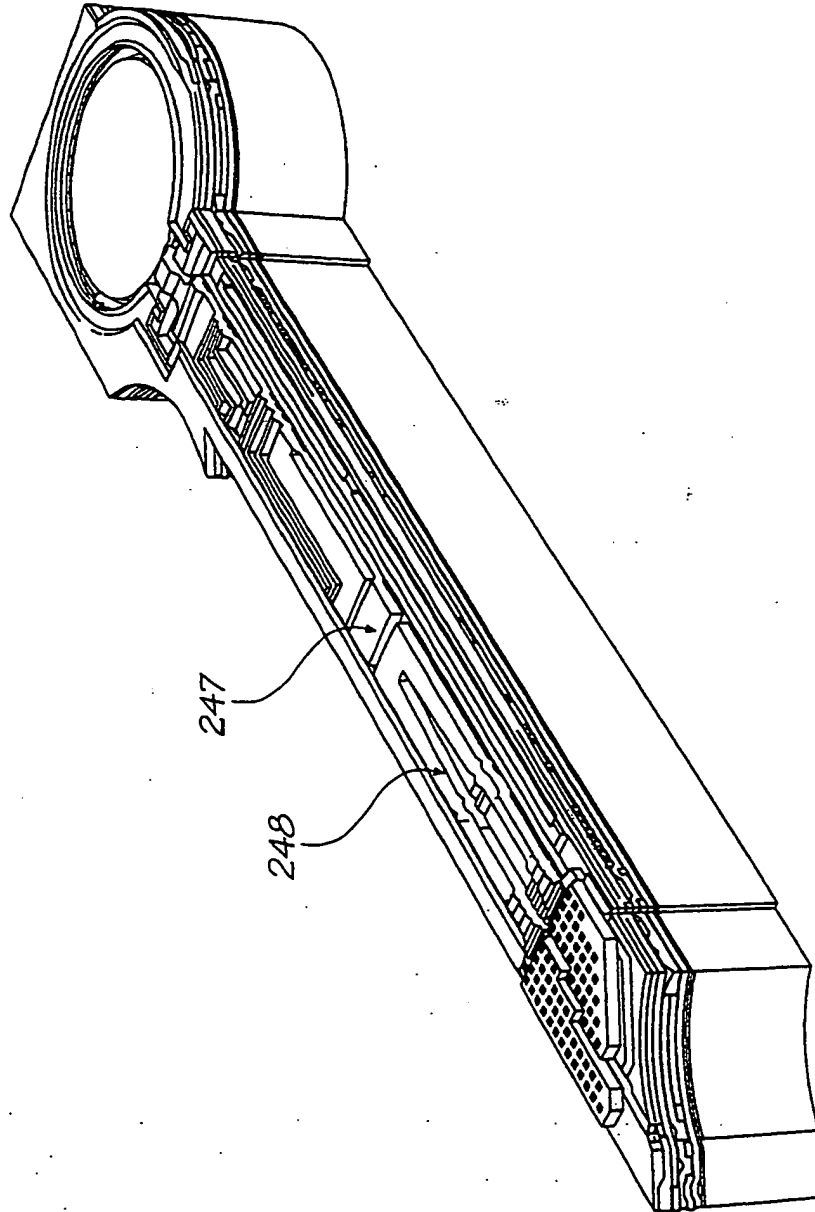
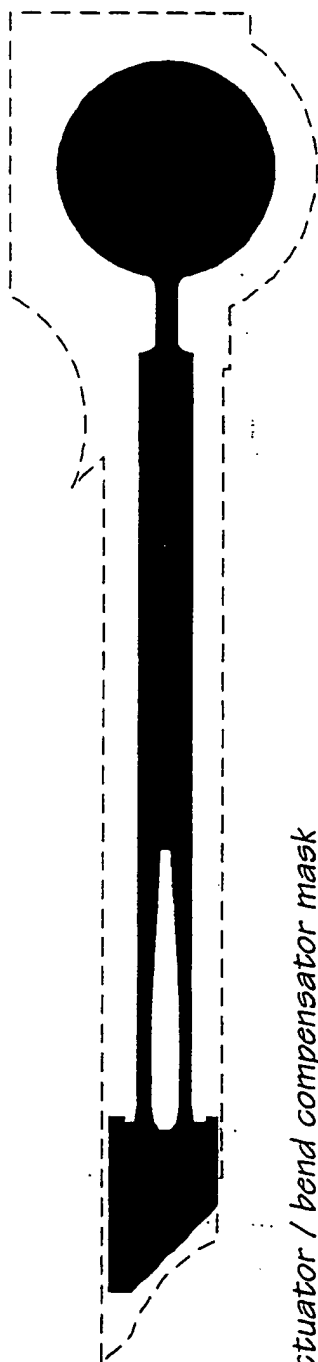


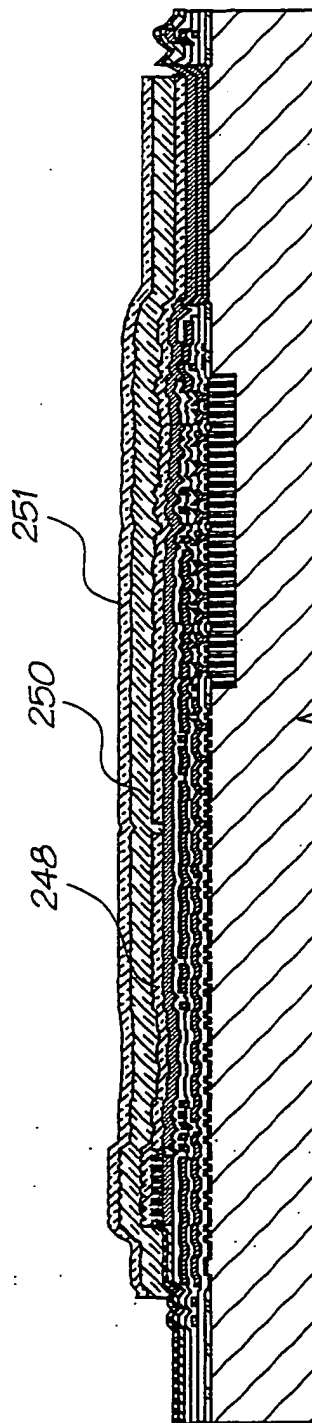
FIG. 55

35/81



Actuator / bend compensator mask

FIG. 56



Deposit actuator glass and bend compensator TiN, etch together

FIG. 57

36/81

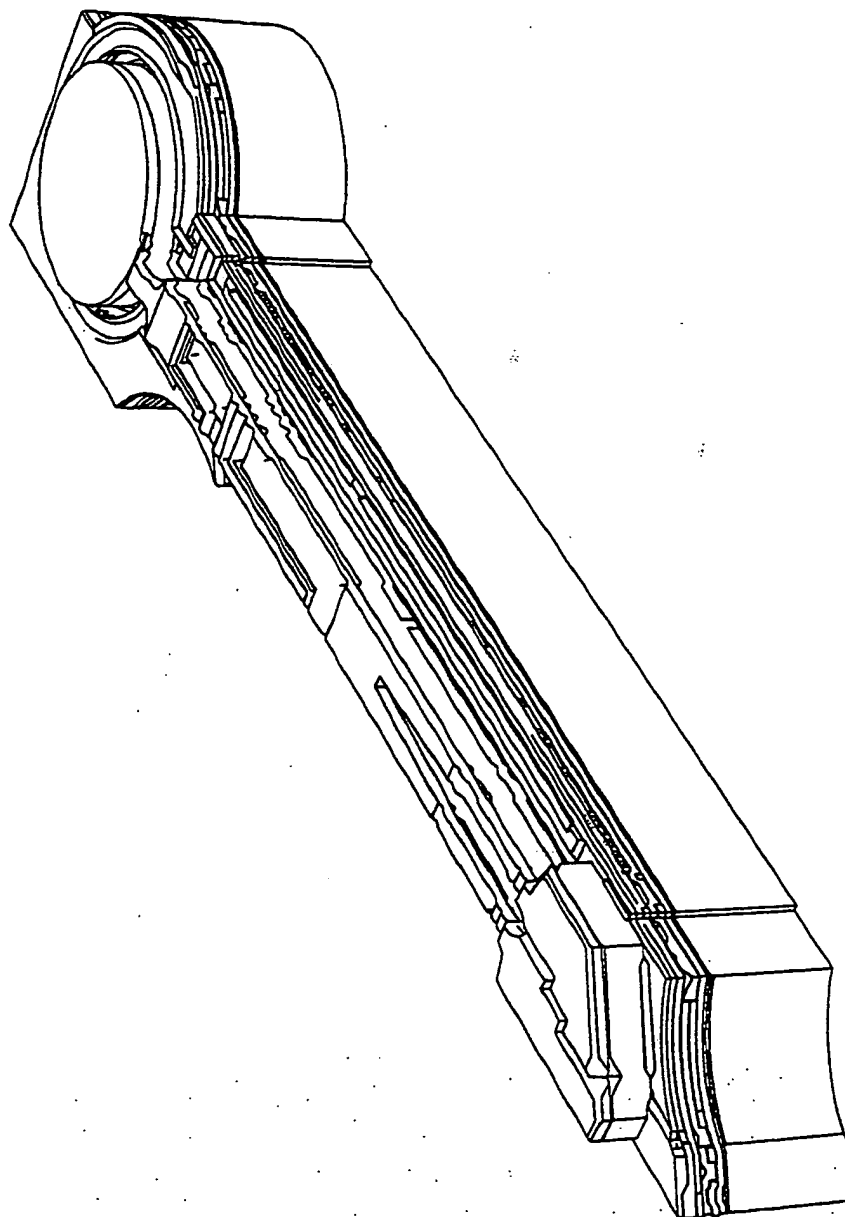


FIG. 58

FIG. 58

37/81

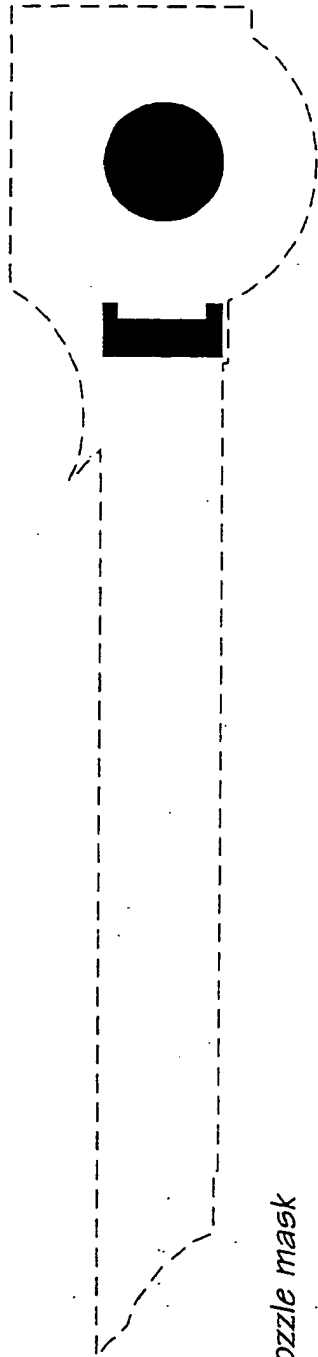


FIG. 59

Nozzle mask

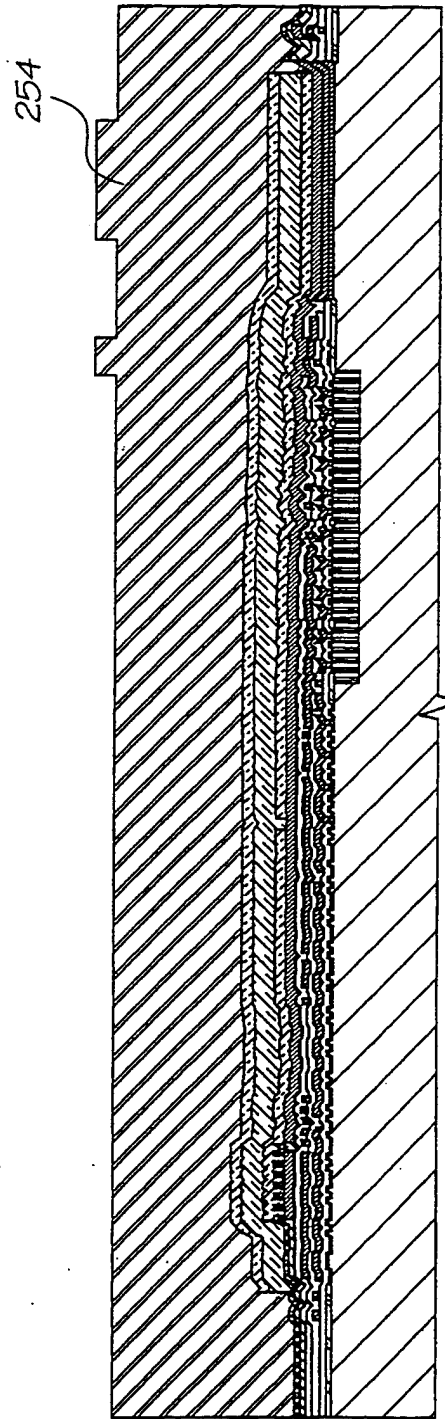


FIG. 60

Deposit sacrificial layer, etch nozzles

38/81

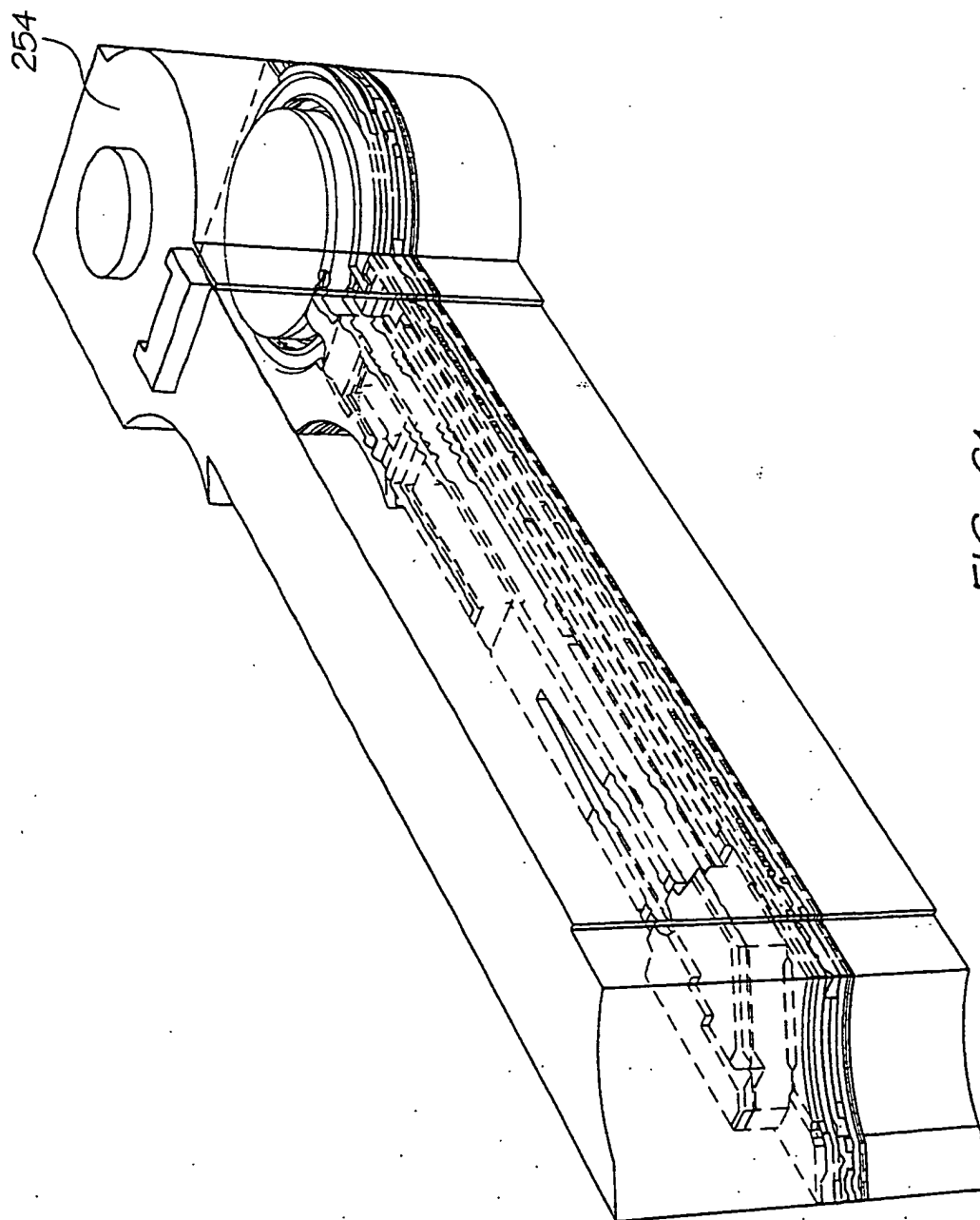
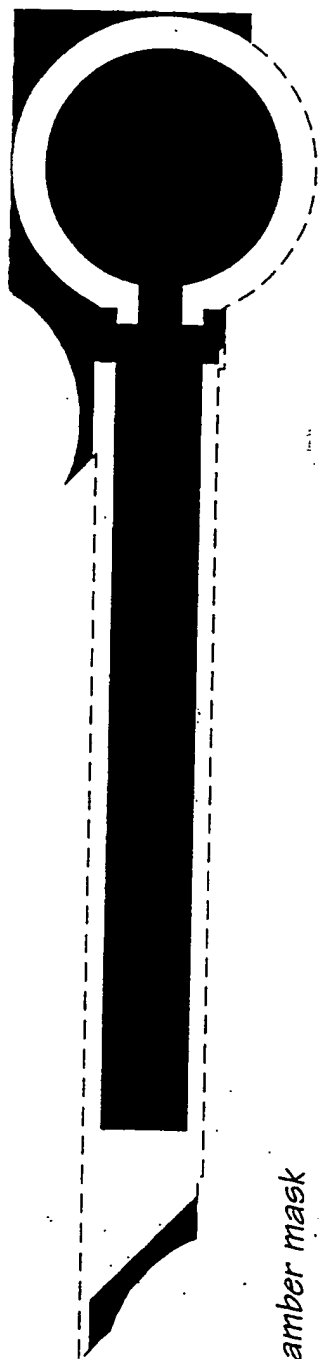


FIG. 61

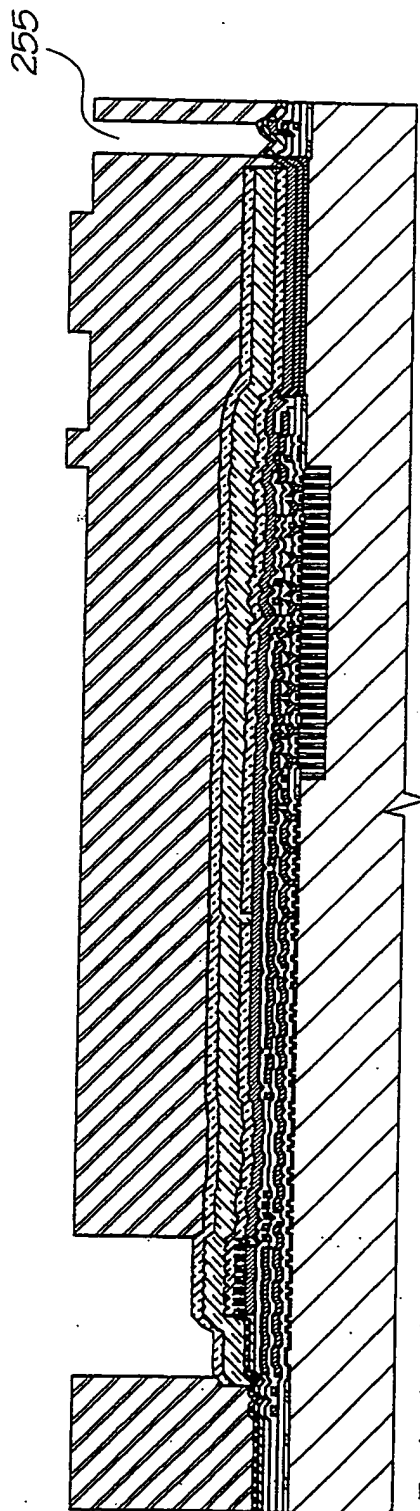
FIG. 61

39/81



Chamber mask

FIG. 62



Etch chambers in sacrificial layer

FIG. 63

40/81

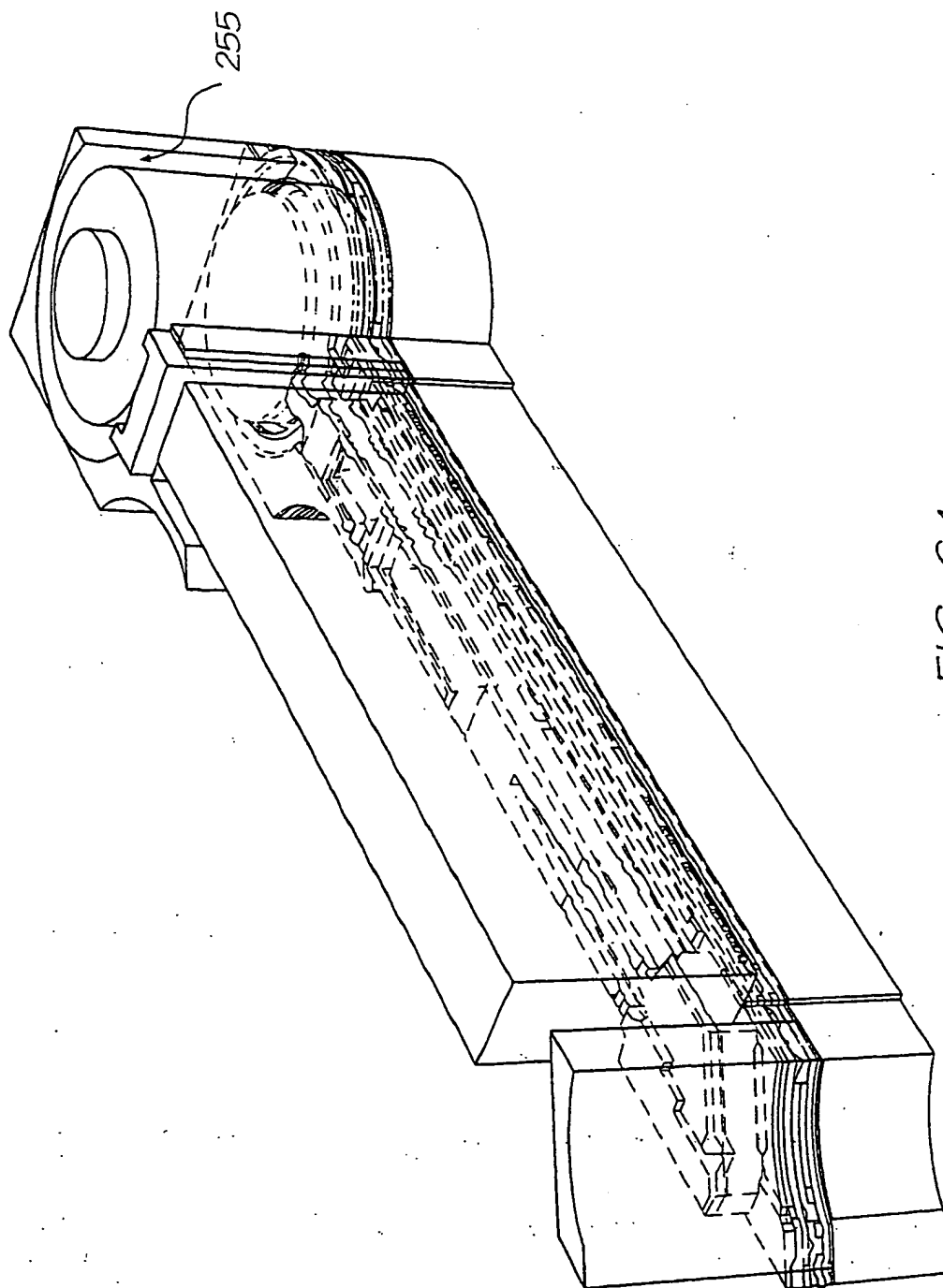


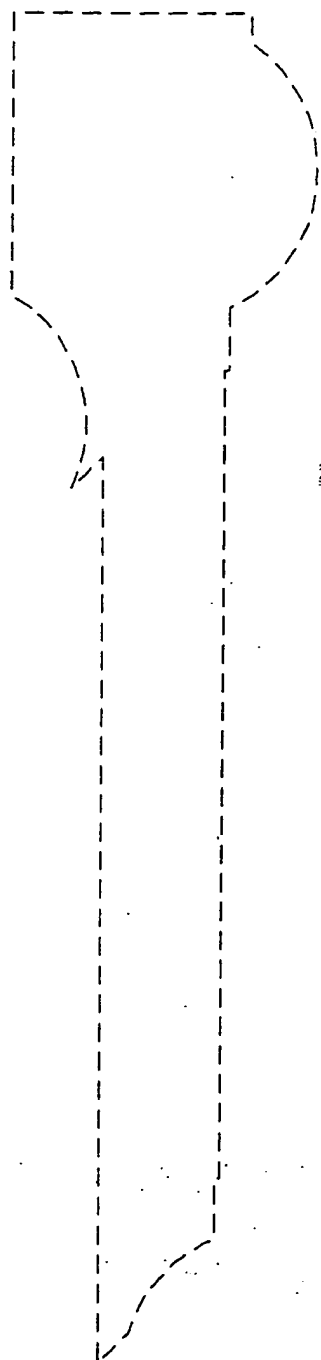
FIG. 64

FIG. 64



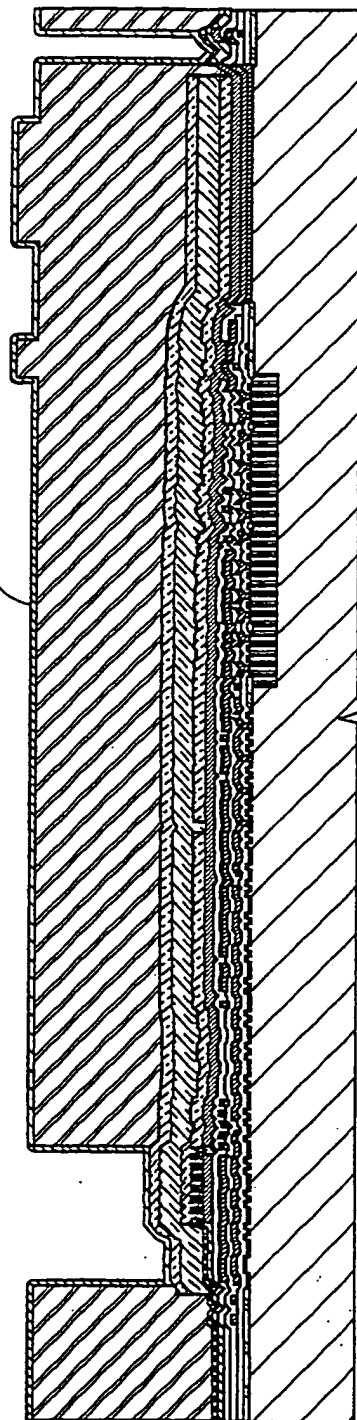
41/81

FIG. 65



No mask

257



Deposit chamber walls

FIG. 65

42/81

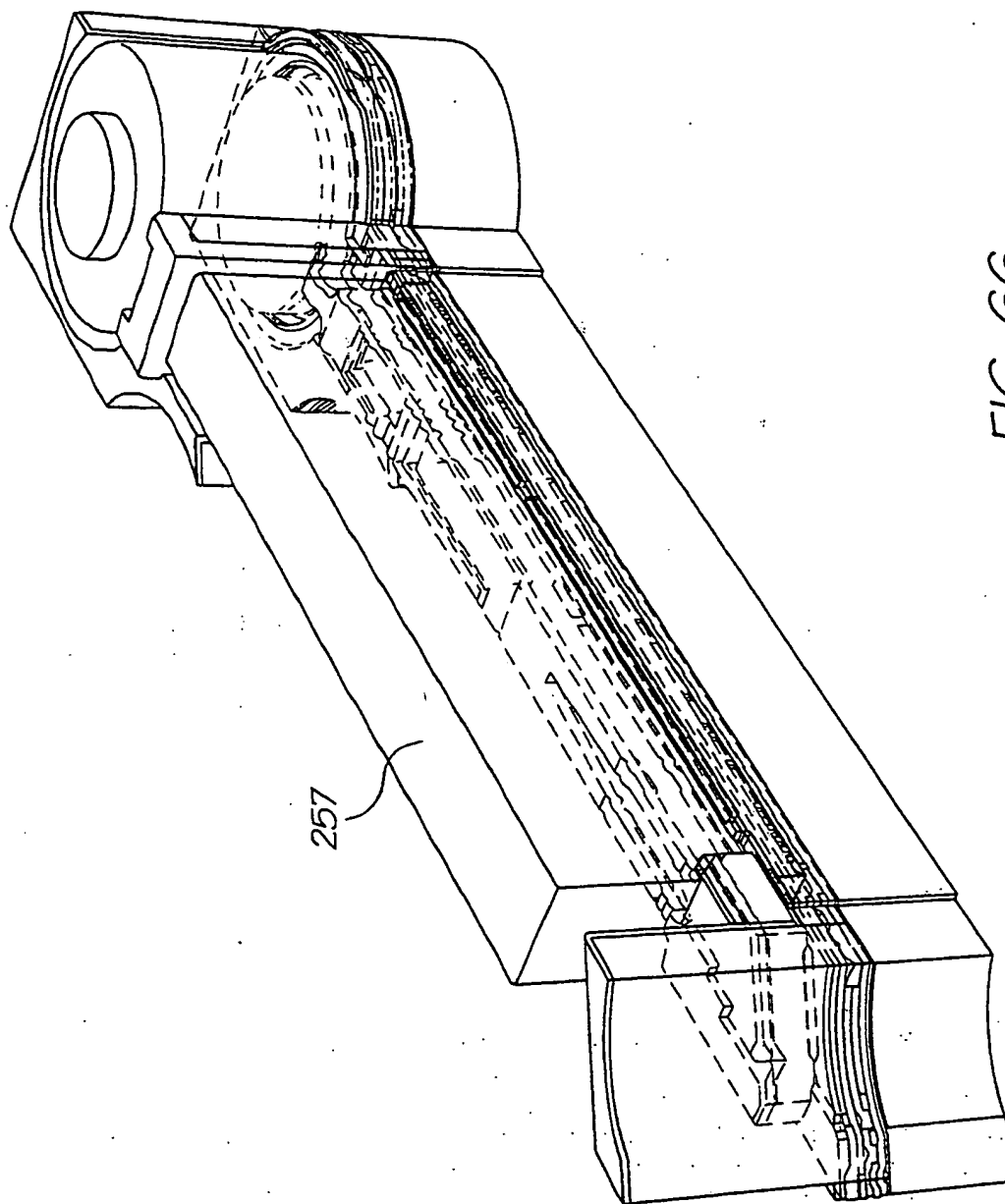
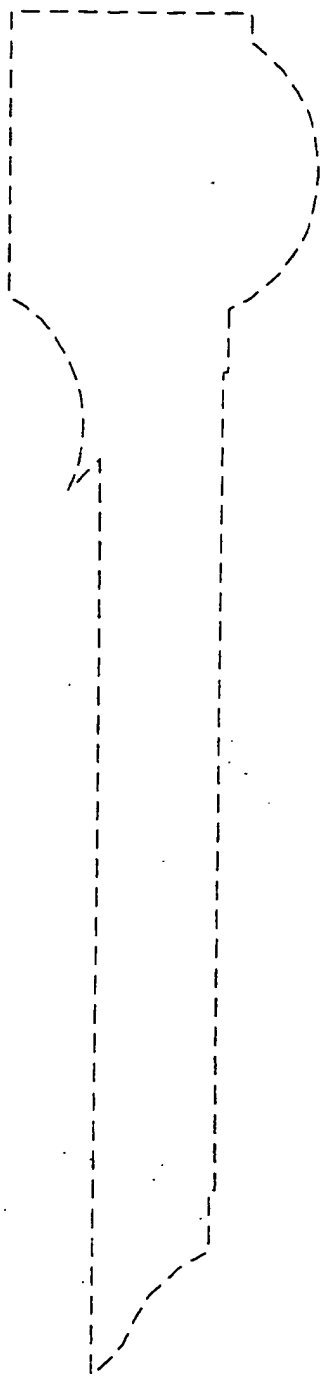
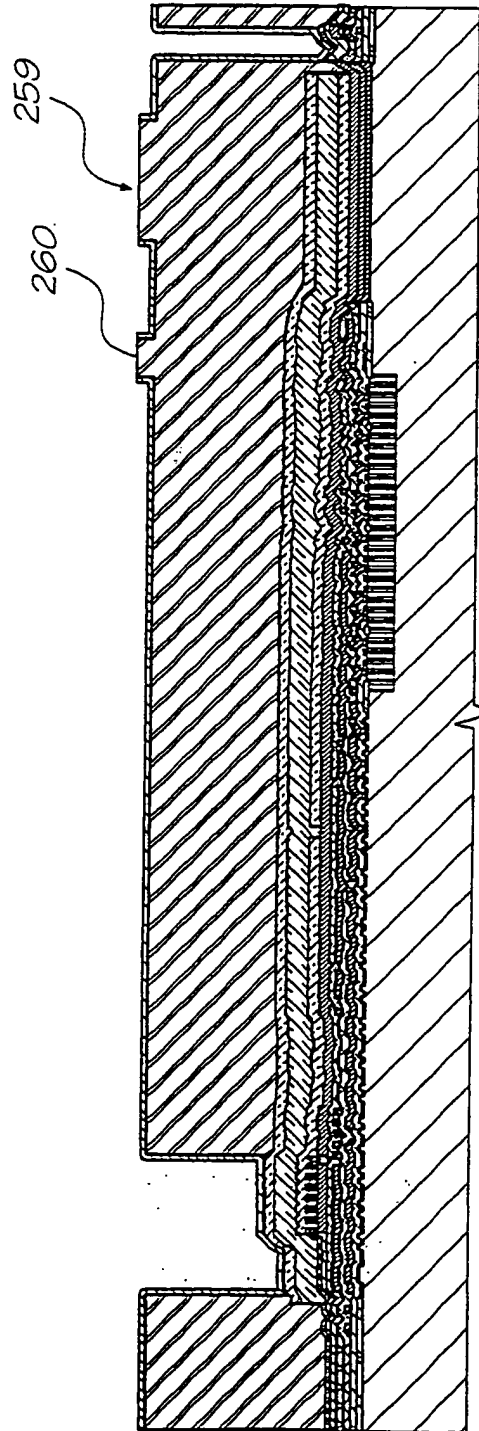


FIG. 66

FIG. 66



No mask



Form self-aligned nozzles using CMP

FIG. 67

44/81

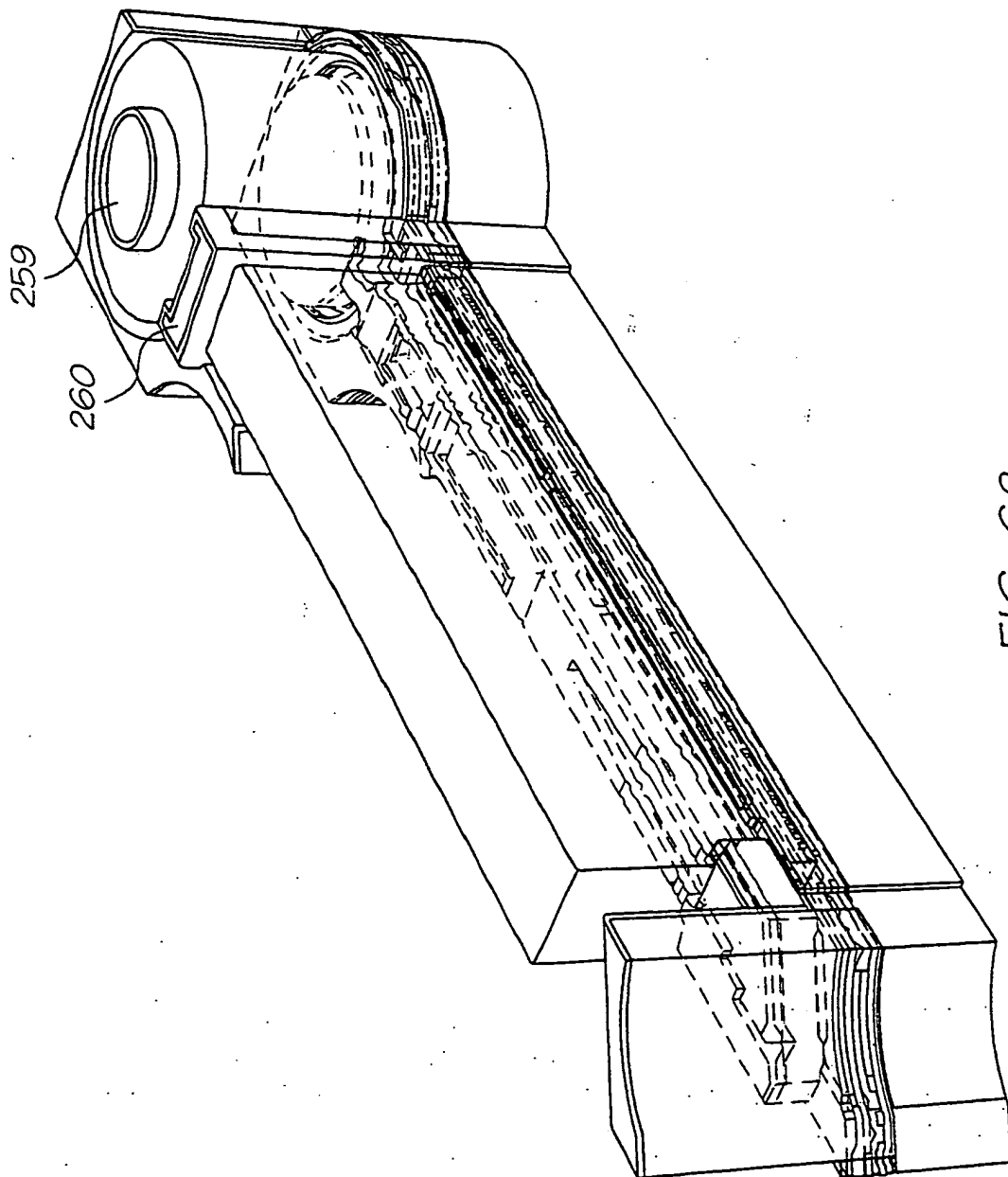
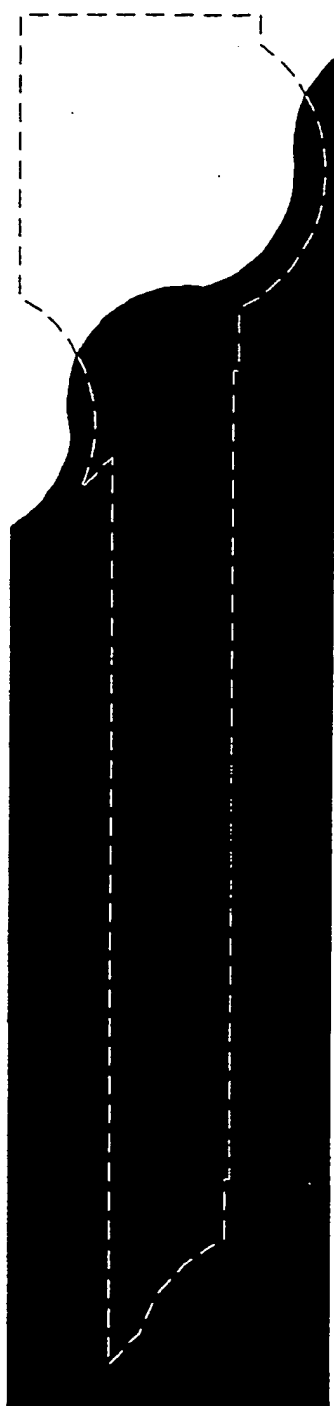


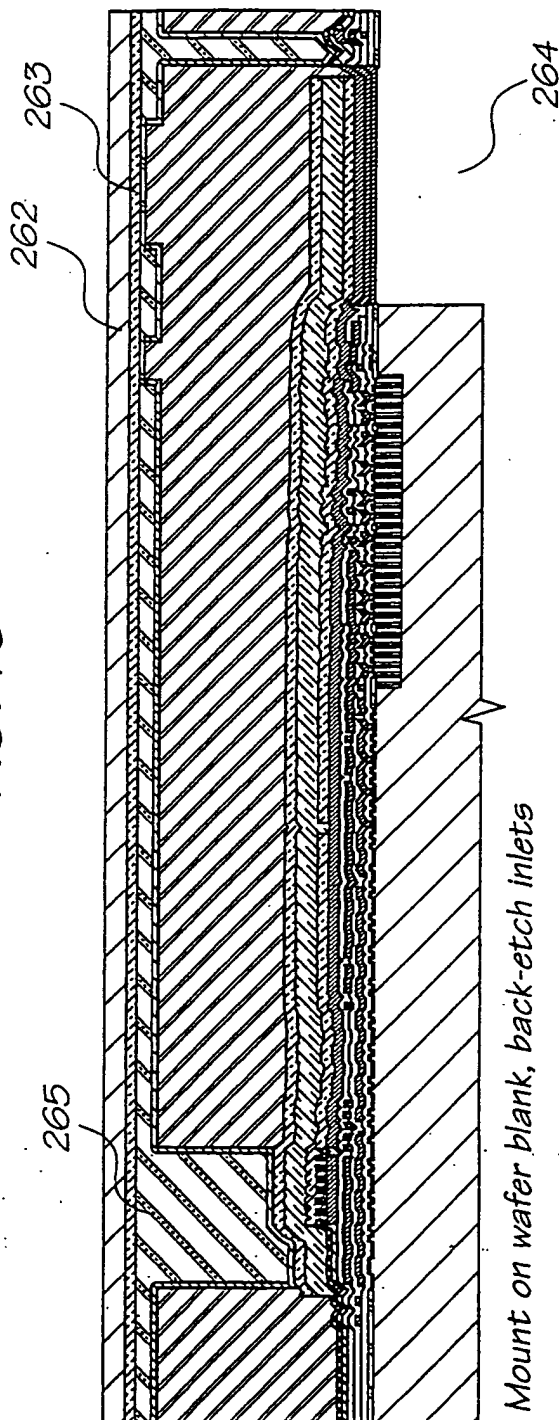
FIG. 68

45/81



Back-etch inlet mask

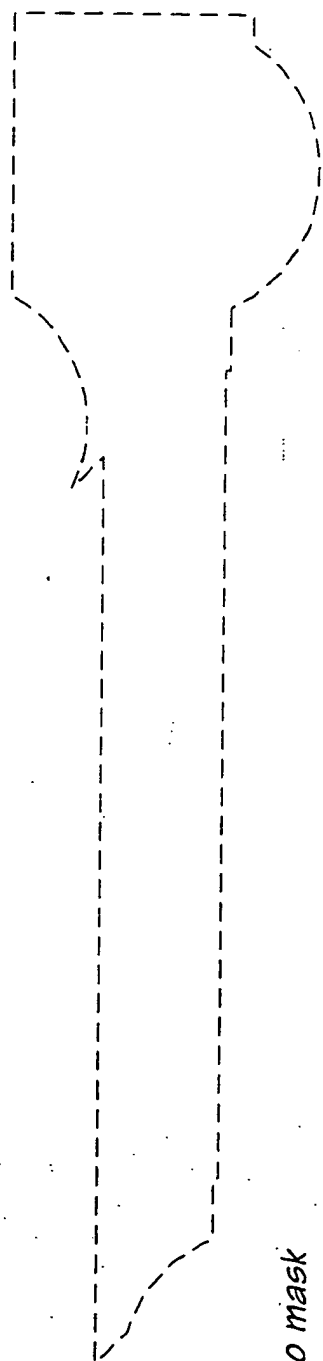
FIG. 70



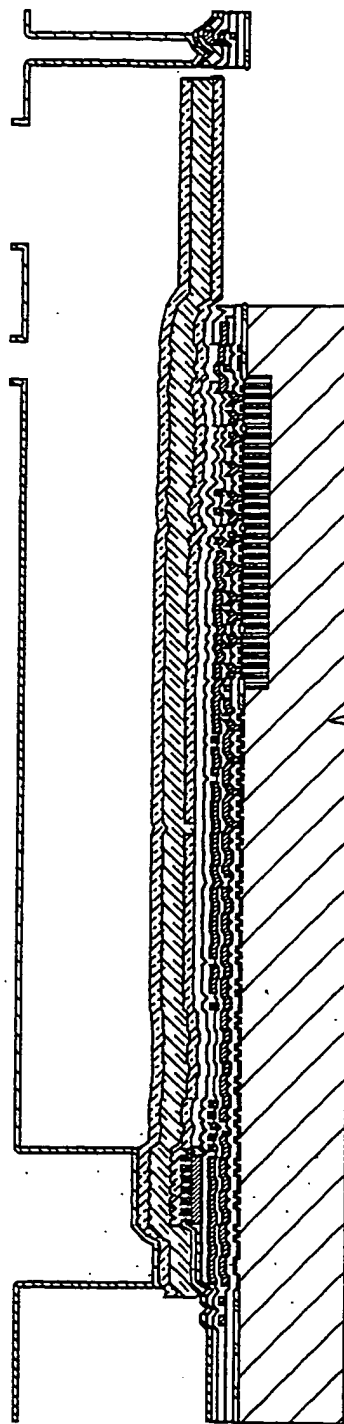
Mount on wafer blank, back-etch inlets

FIG. 69

46/81



No mask



Detach from wafer blank, etch sacrificial material

FIG. 71

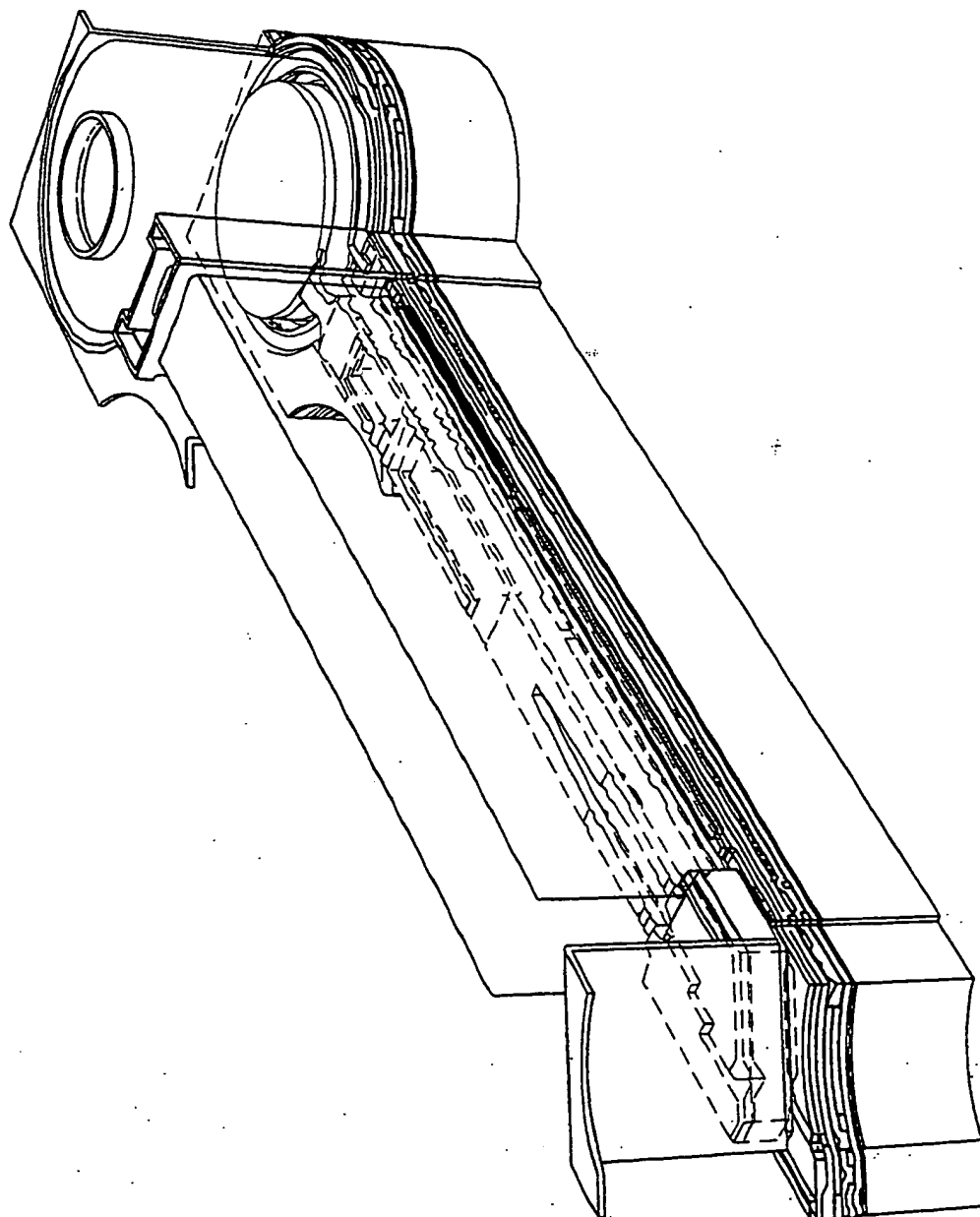


FIG. 72

FIG. 72

48/81

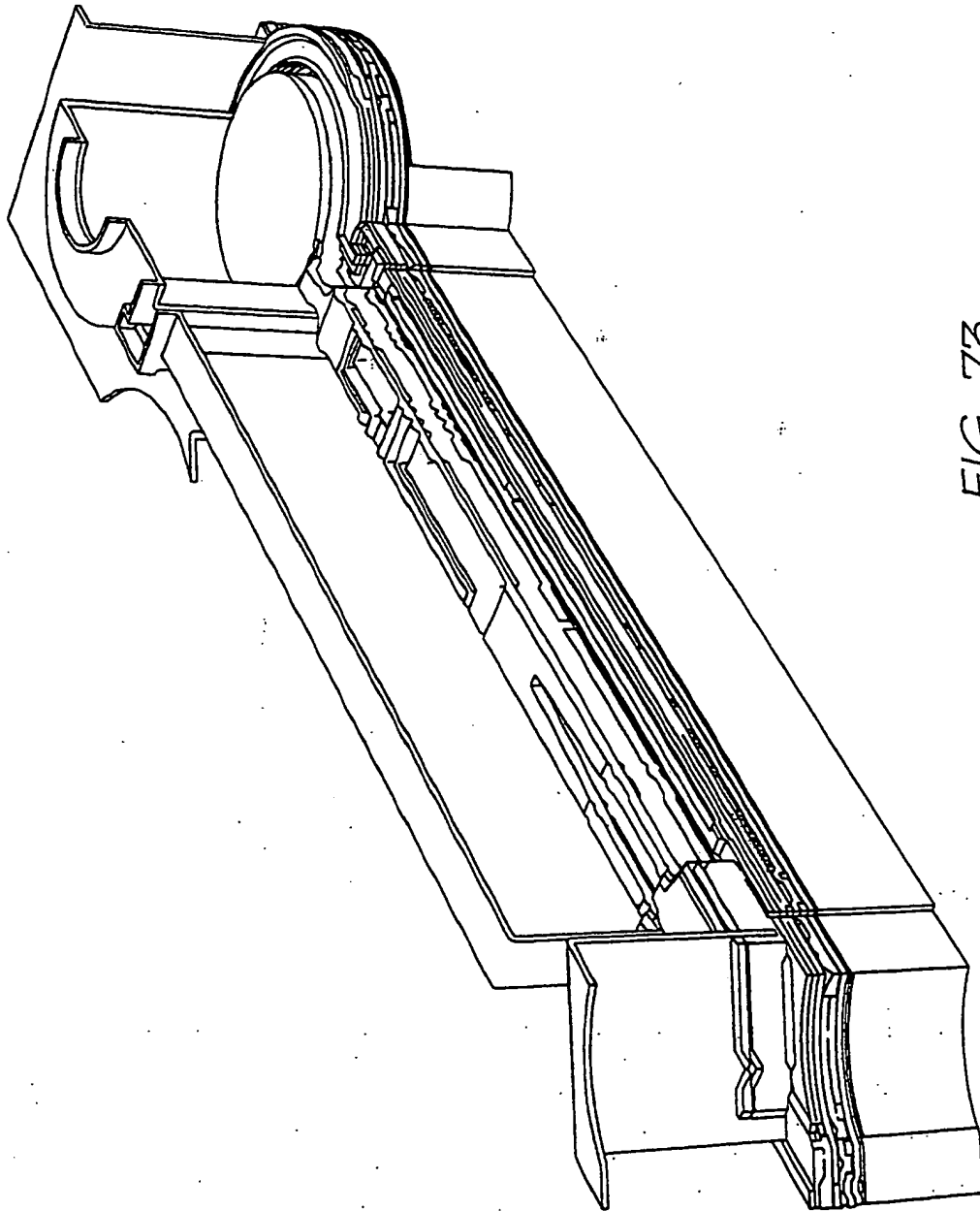


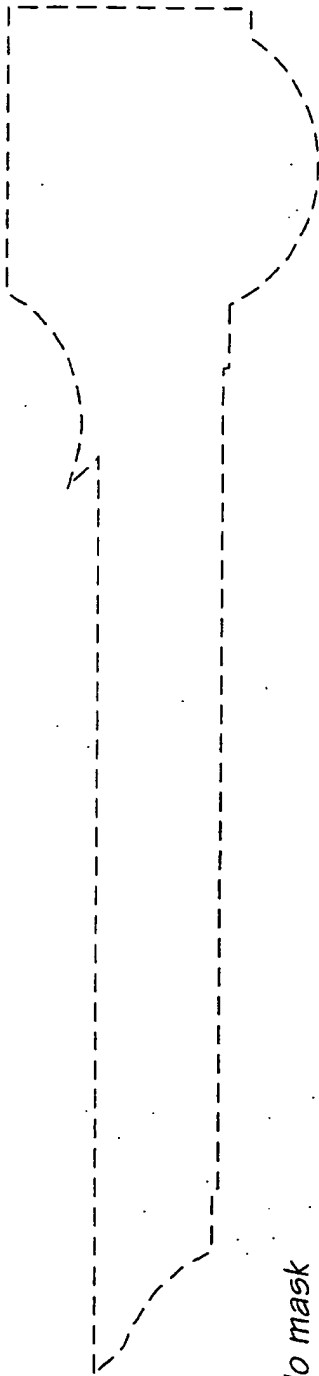
FIG. 73

FIG. 73

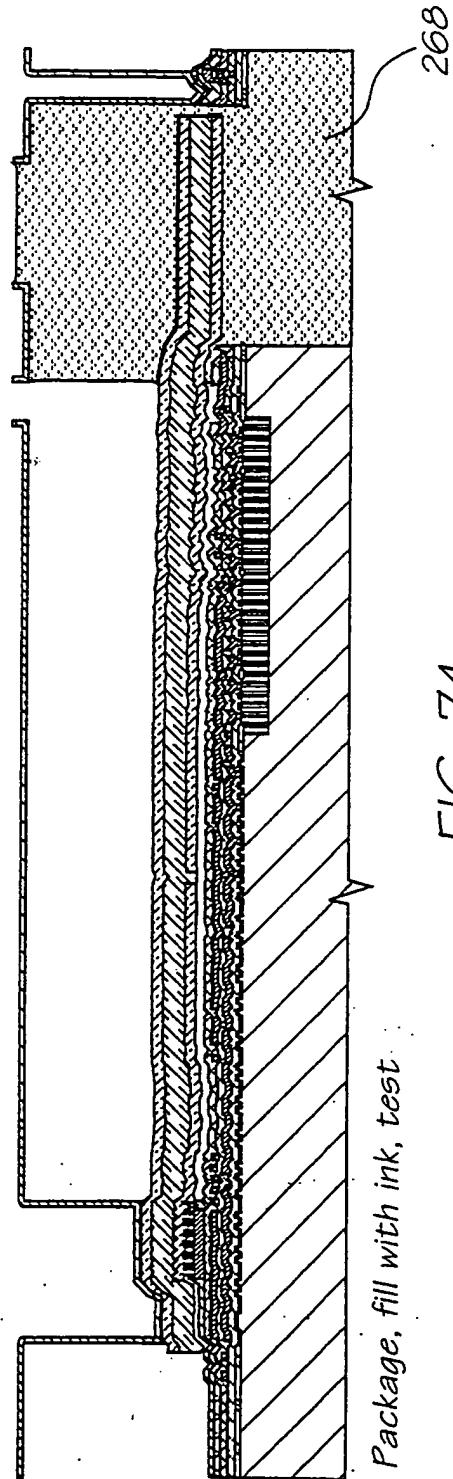


49/81

FIG. 73



No mask



Package, fill with ink, test

FIG. 74

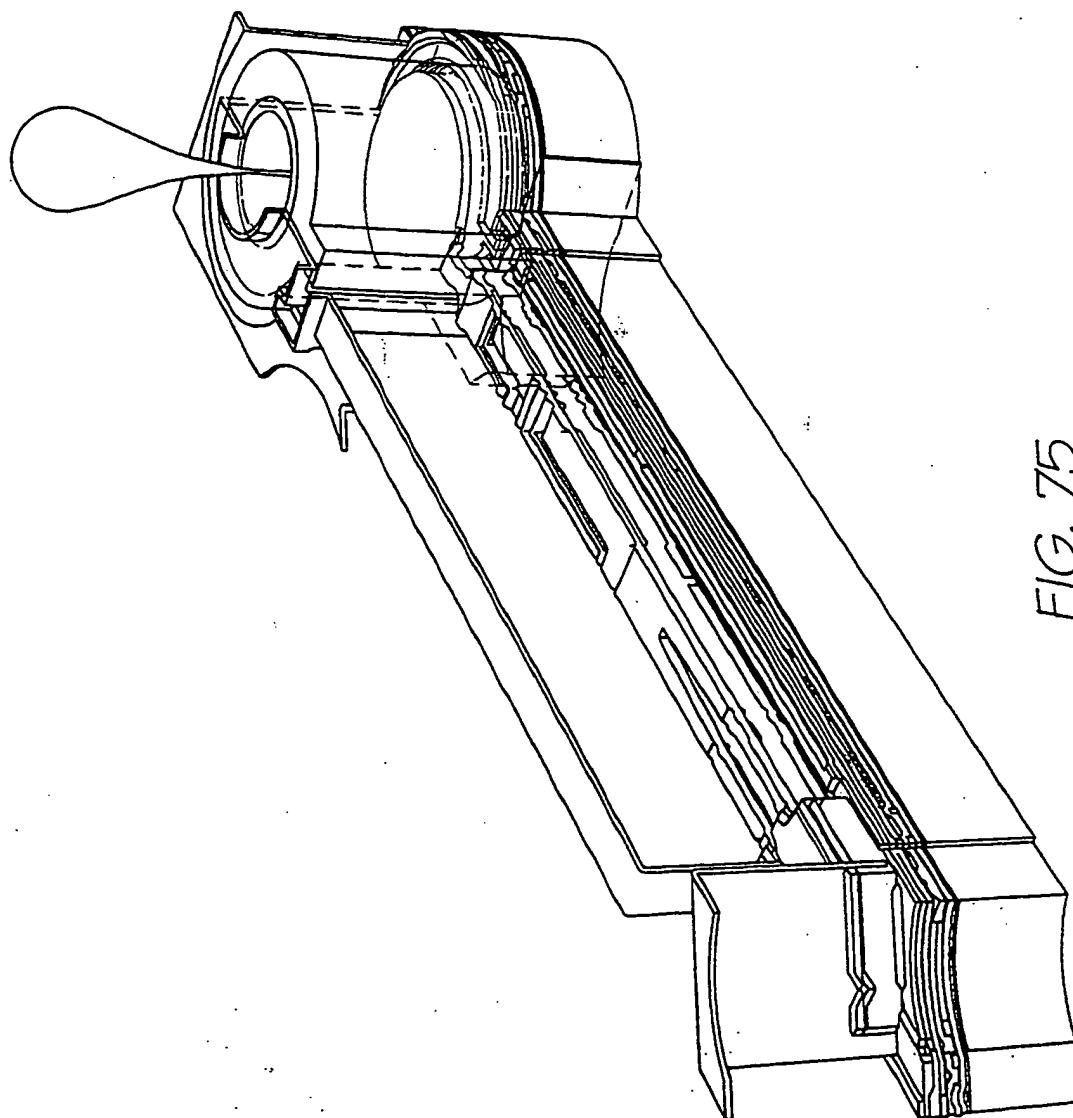


FIG. 75

FIG. 75

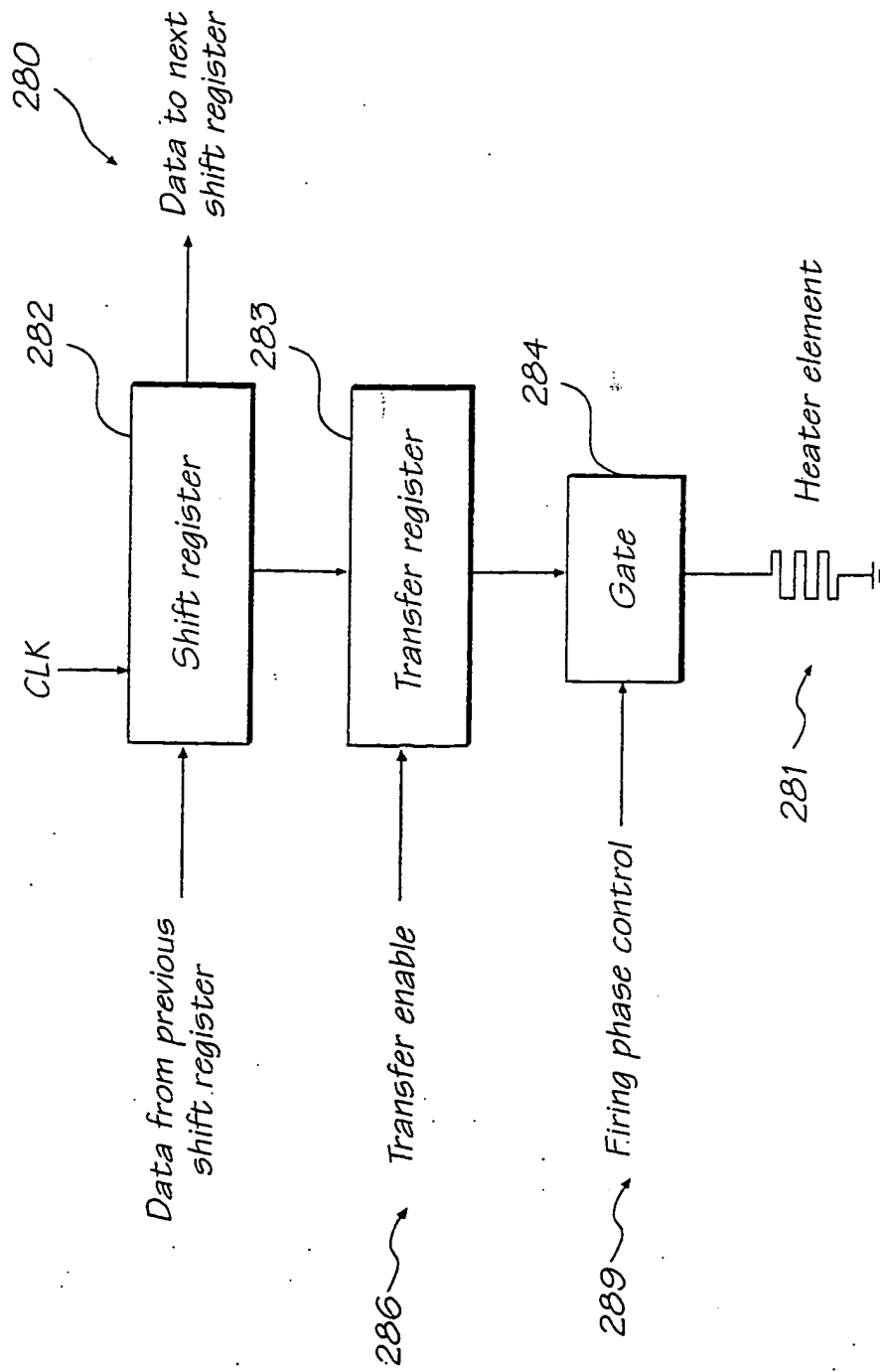


FIG. 76

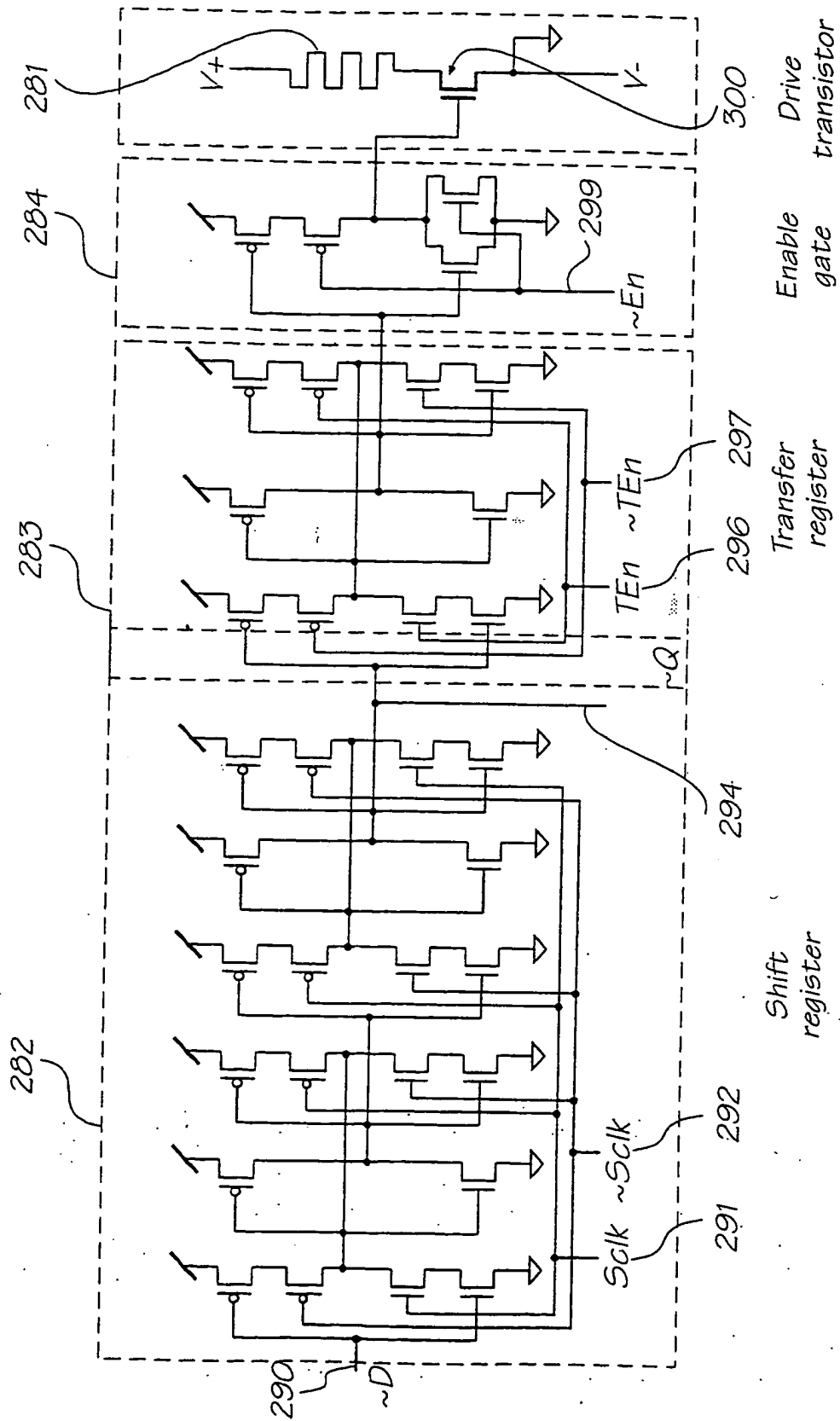


FIG. 77

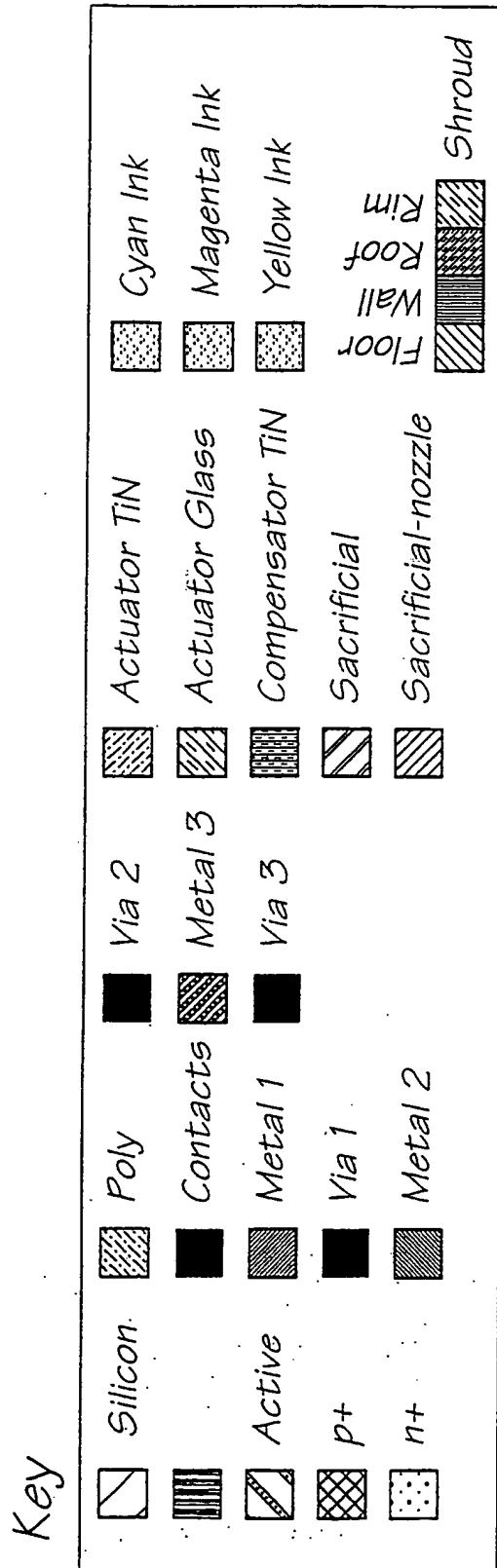


FIG. 78

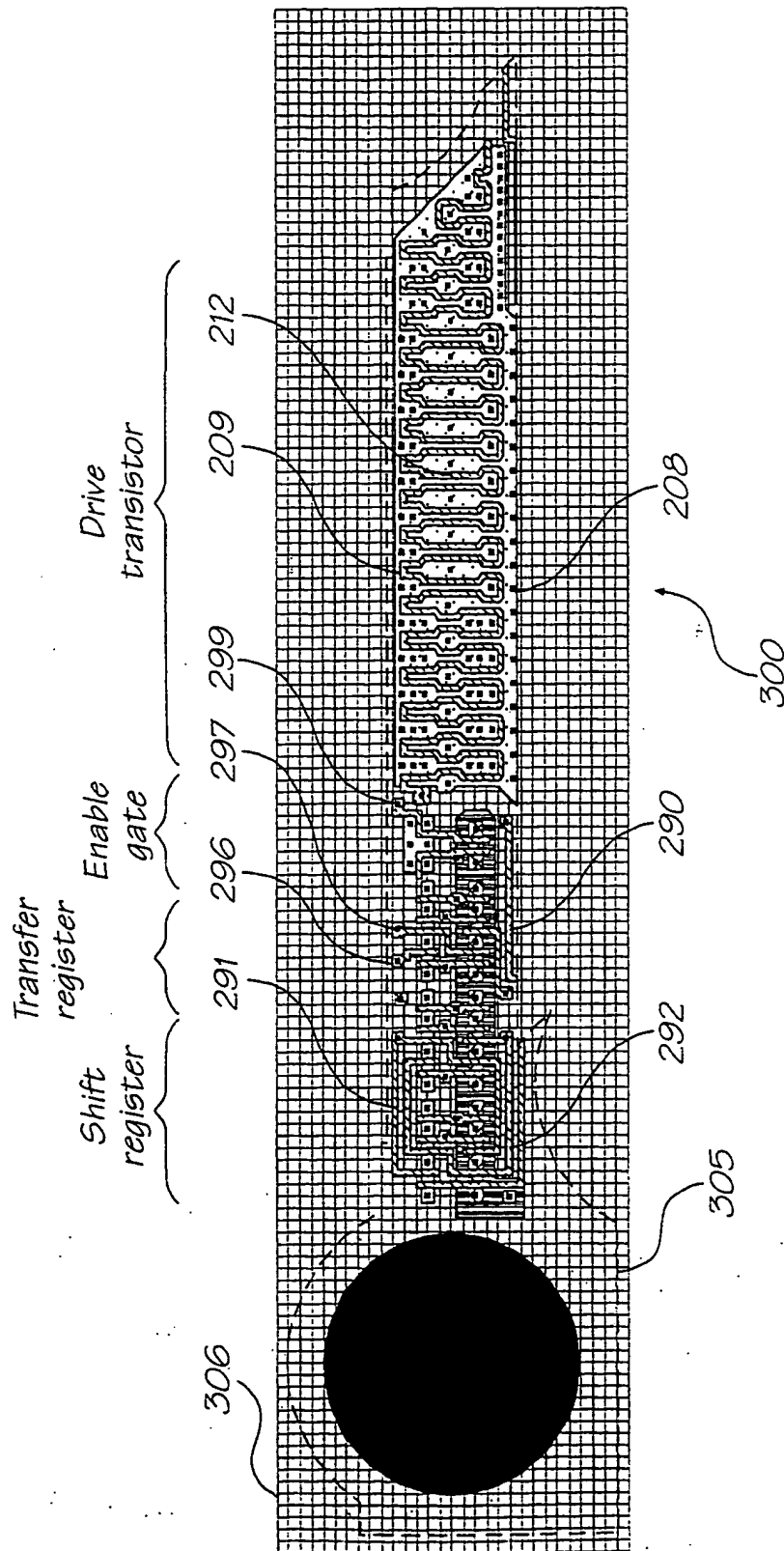


FIG. 79

296 297

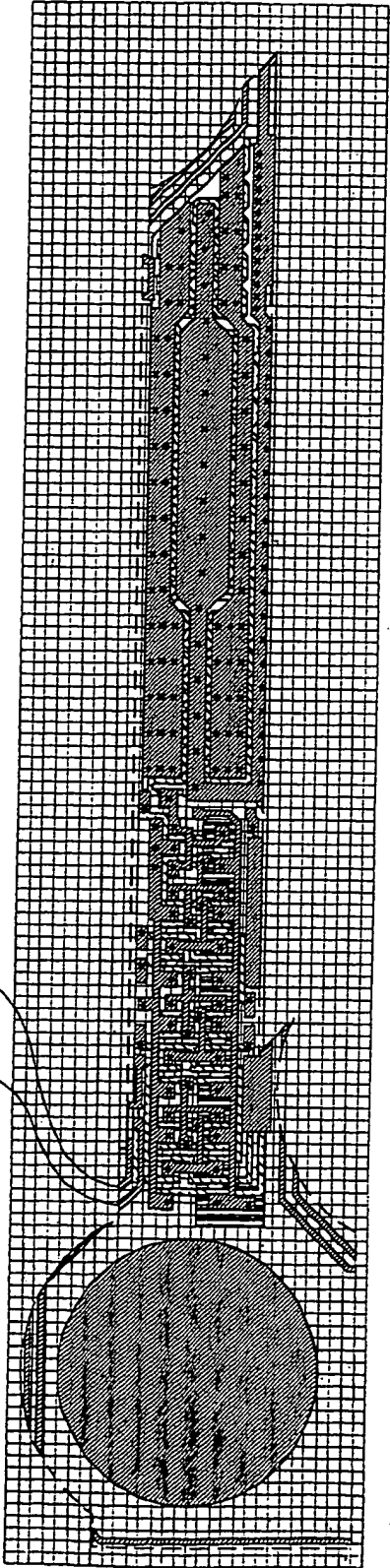


FIG. 80

FIG. 80

56/81

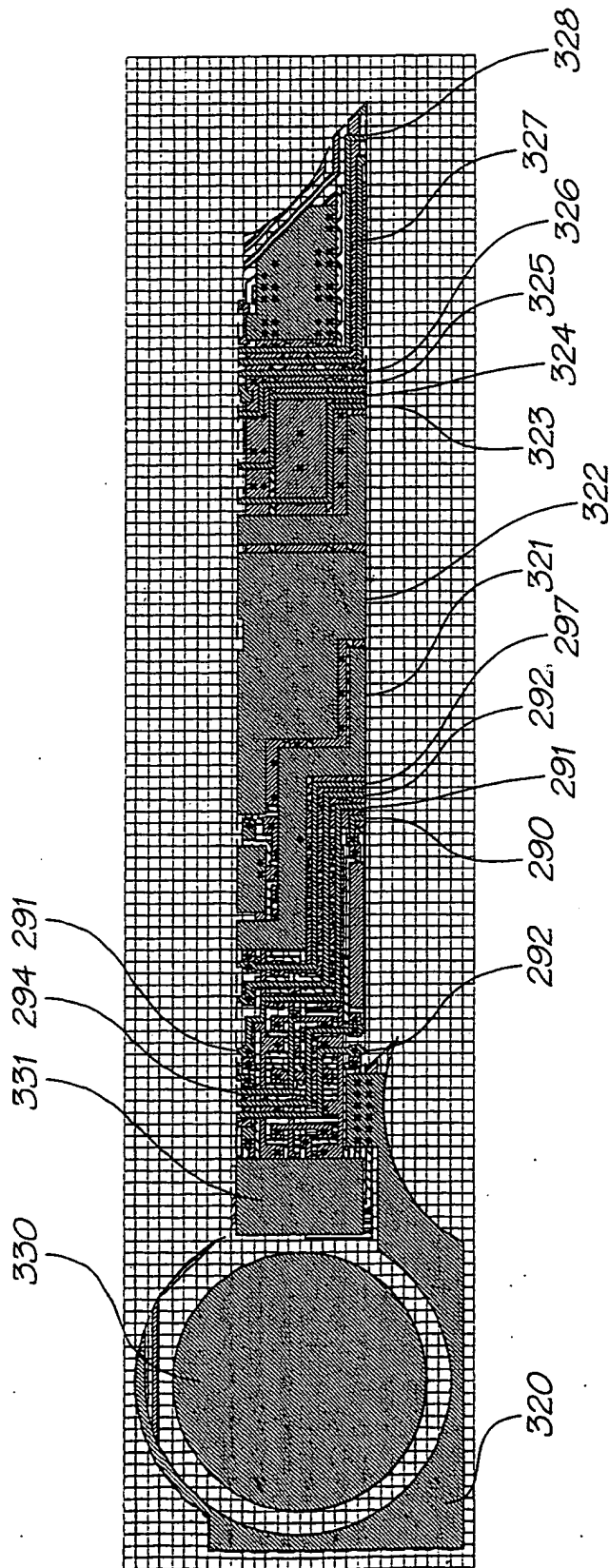


FIG. 81



57/81

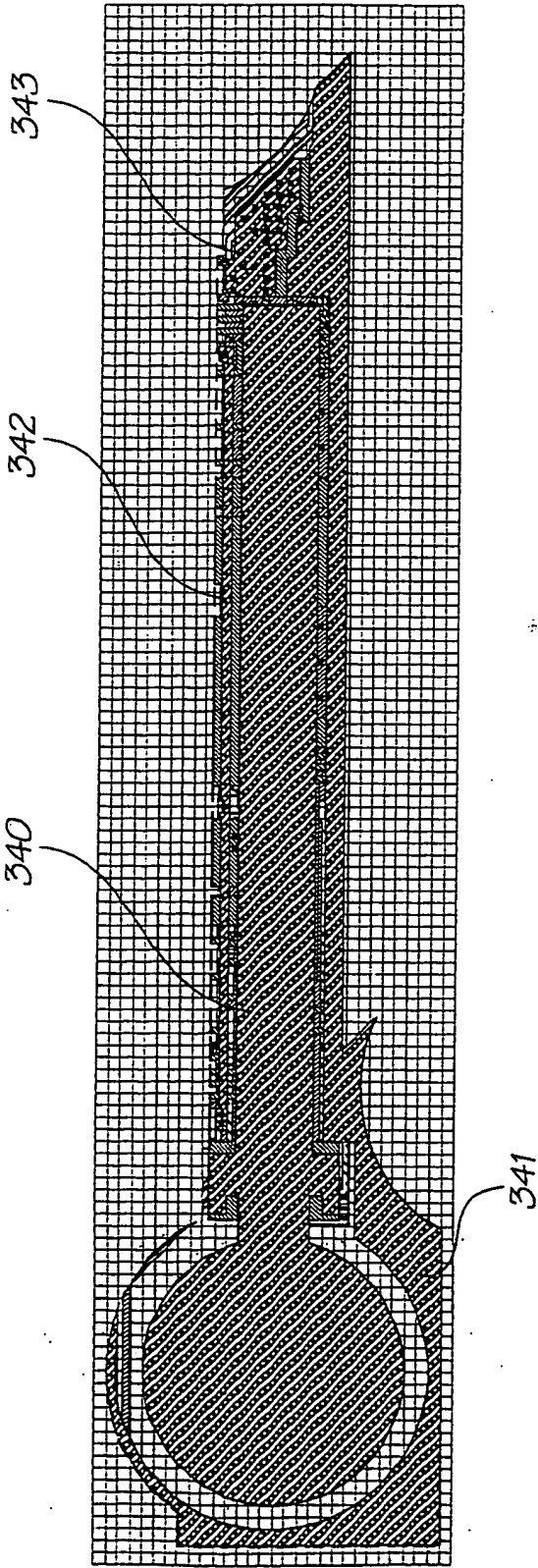


FIG. 82

FIG. 82

58/81

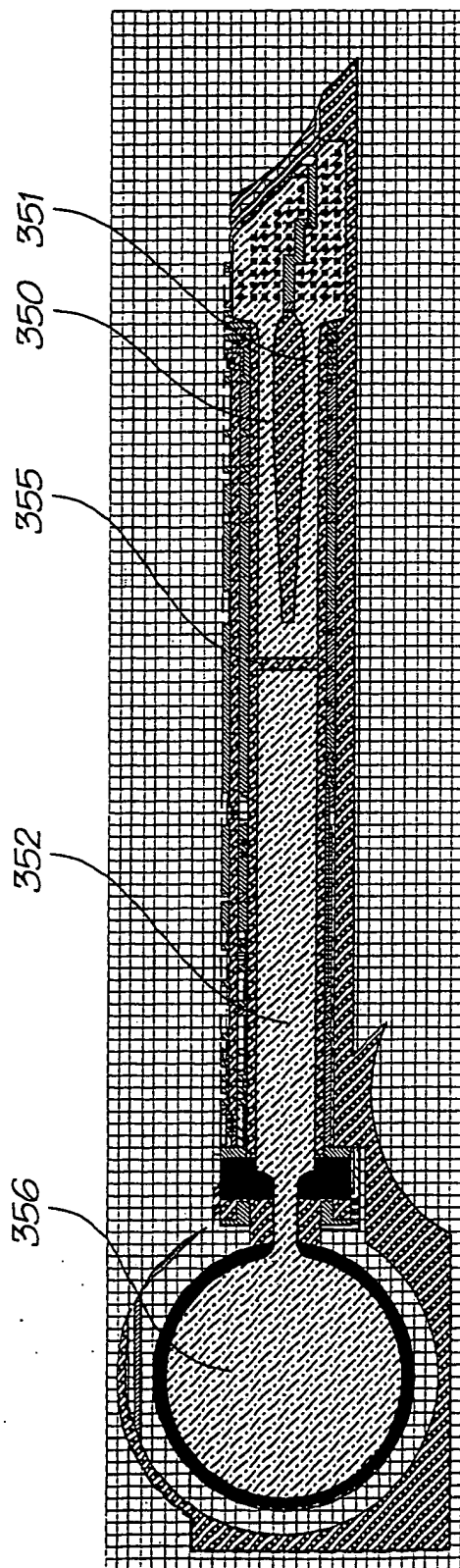


FIG. 83

FIG. 83

59/81

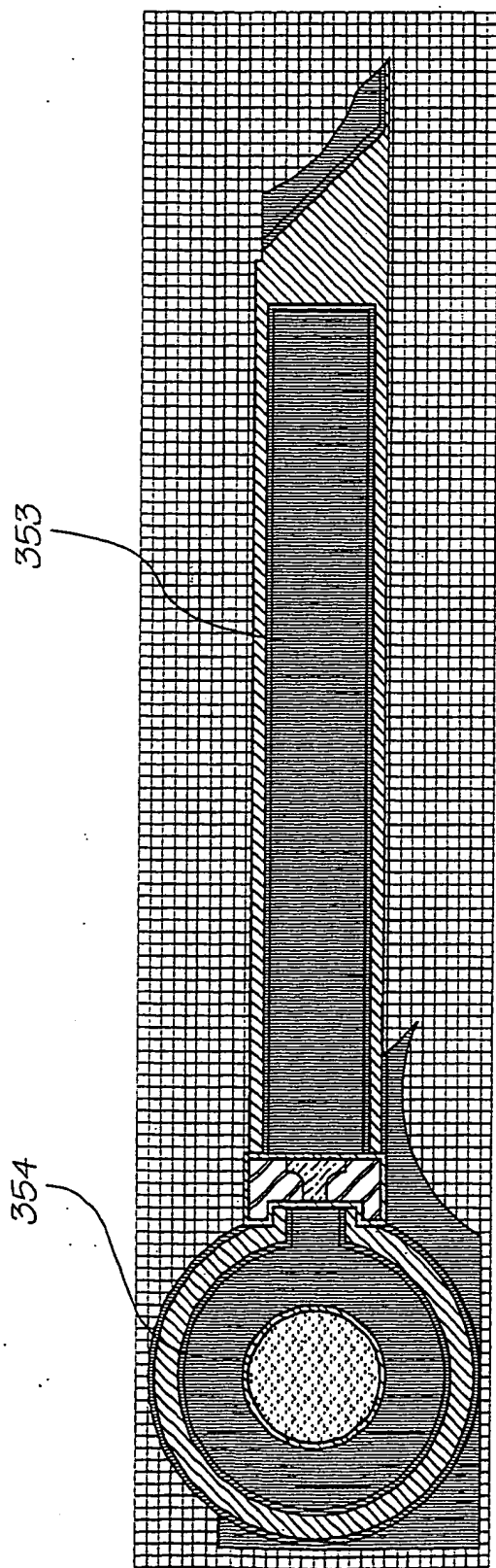
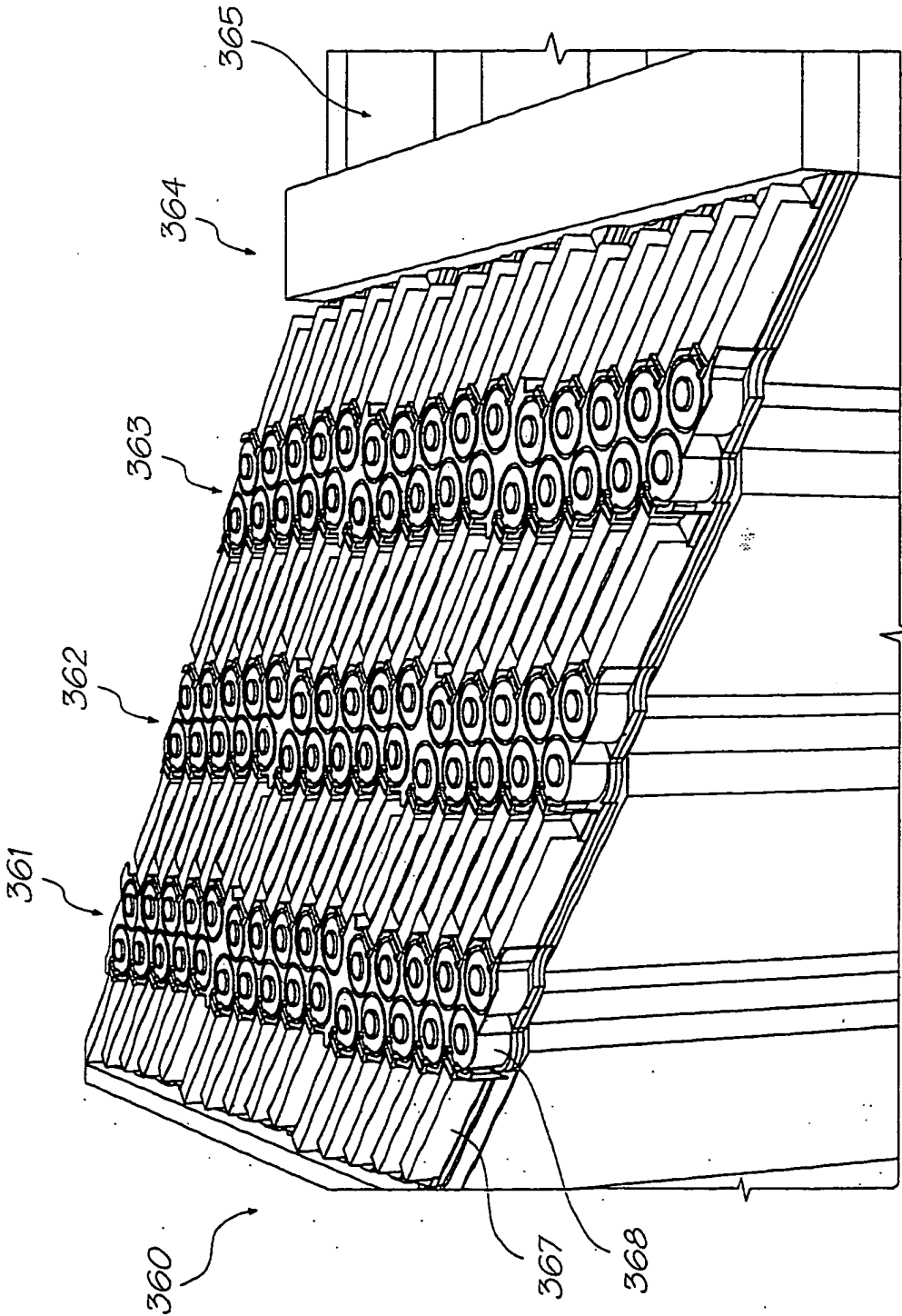


FIG. 84

60/81



61/81

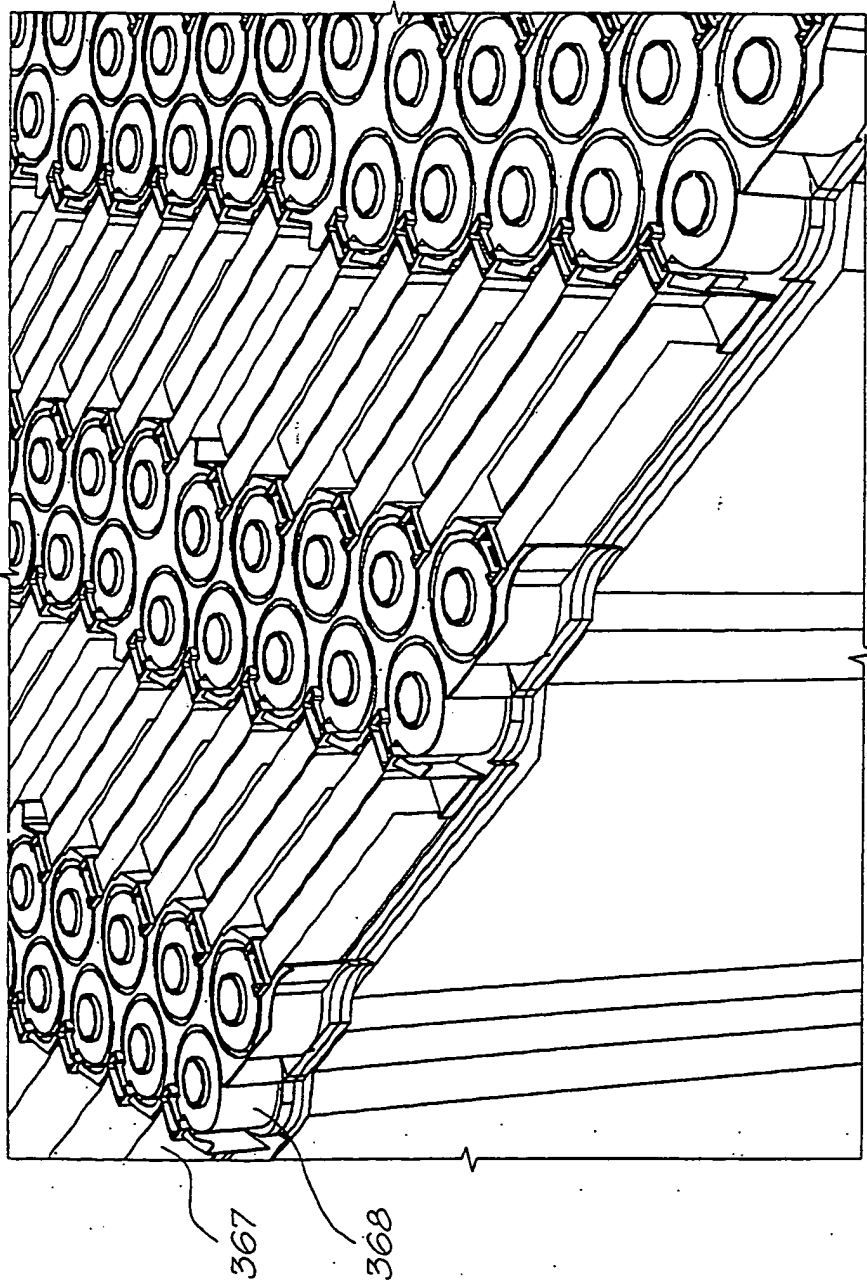


FIG. 86

FIG. 86

62/81

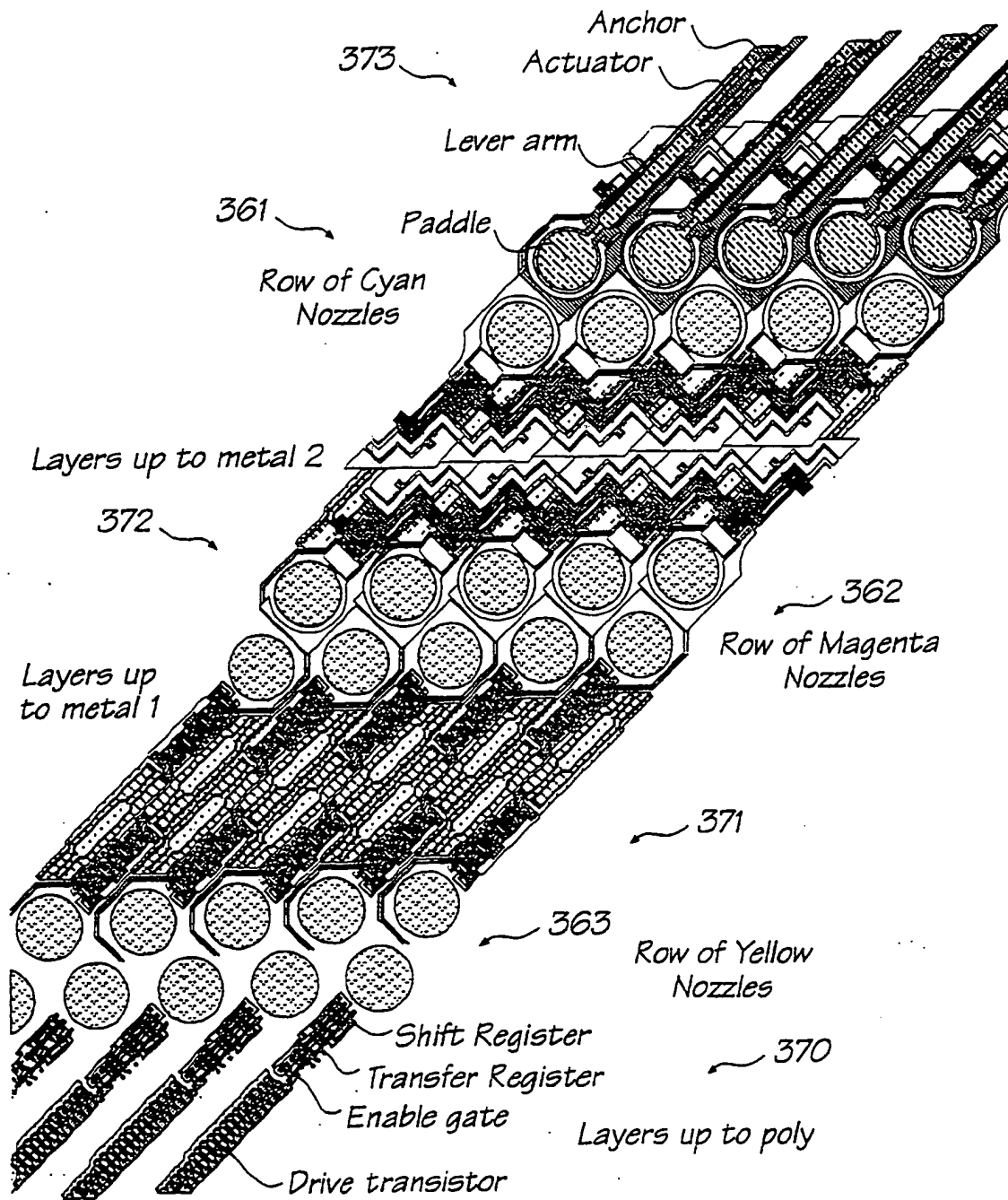


FIG. 87

63/81

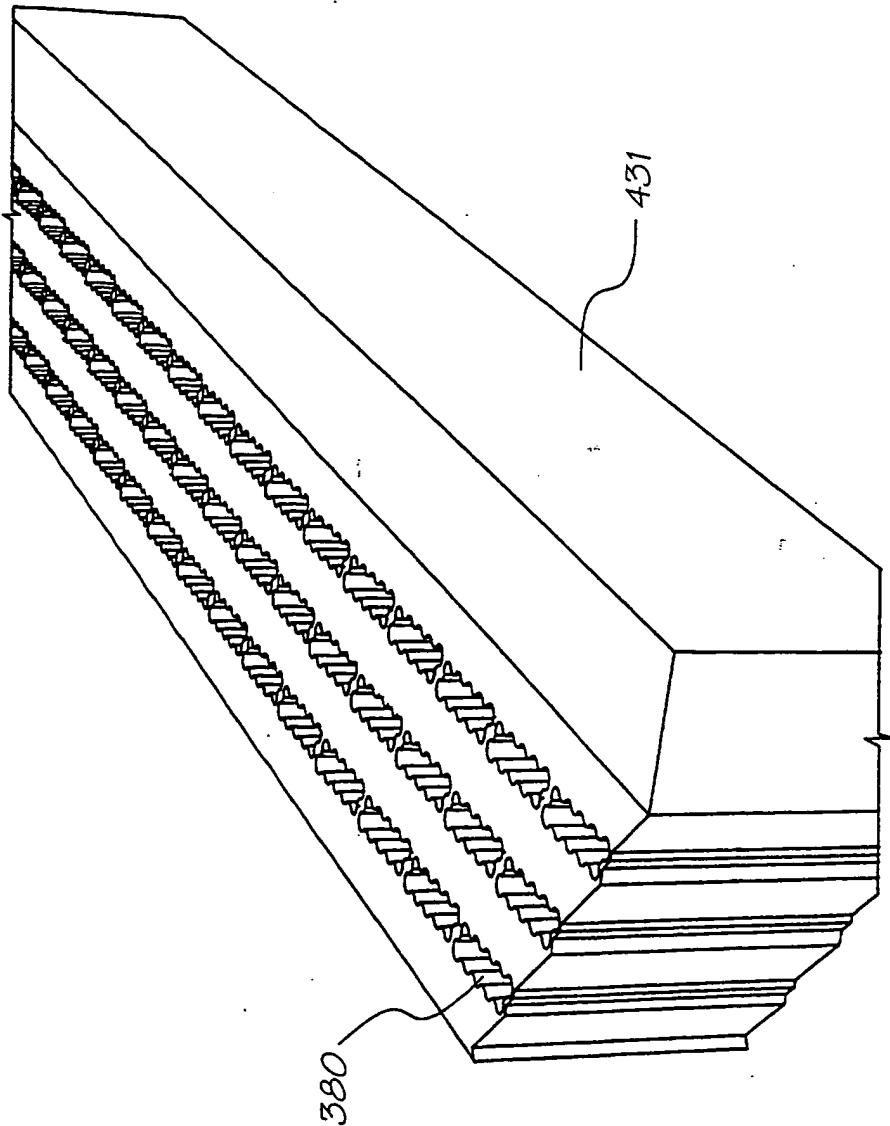


FIG. 88

64/81

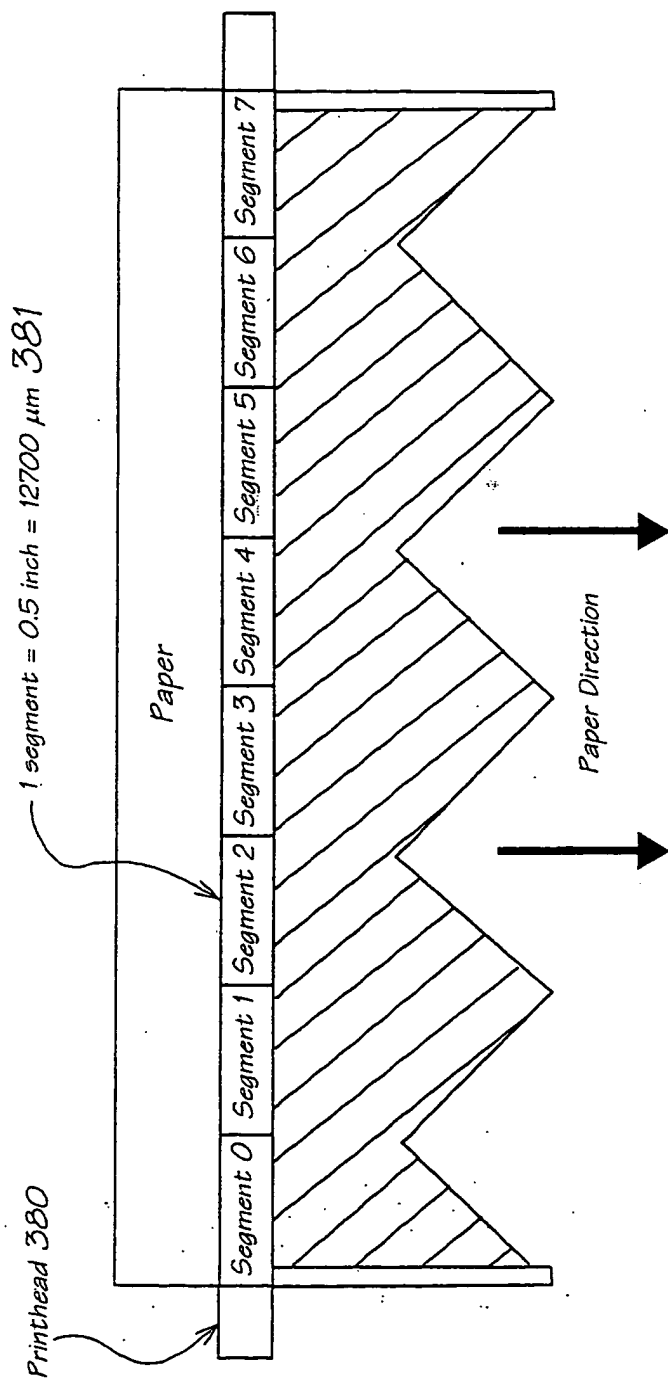
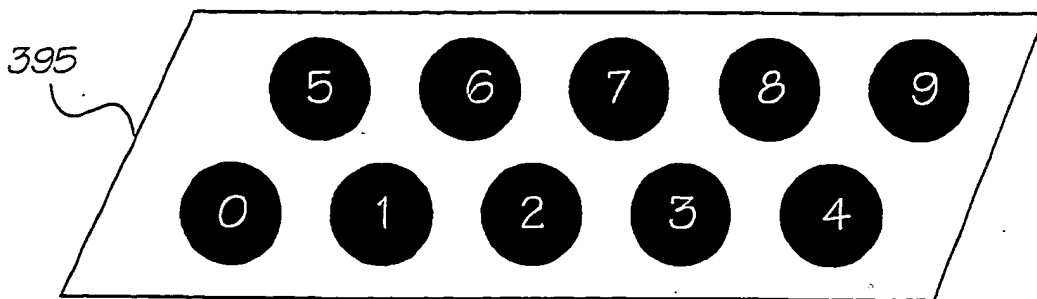


FIG. 89

FIG. 89



65/81



A single pod, numbered by firing order

Fig. 90

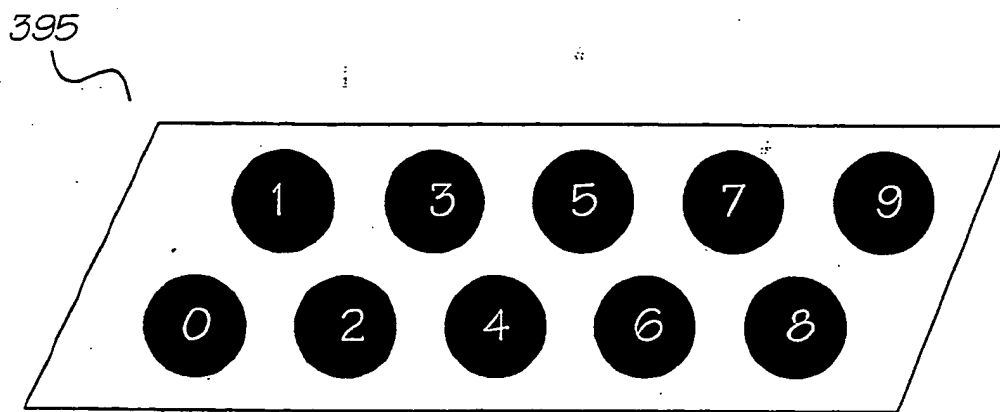


Fig. 91

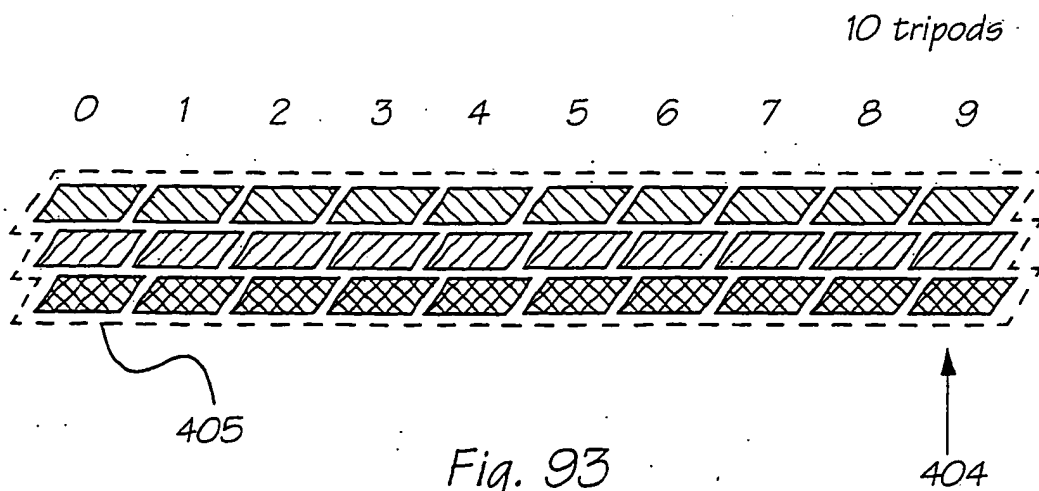


Fig. 93

66/81

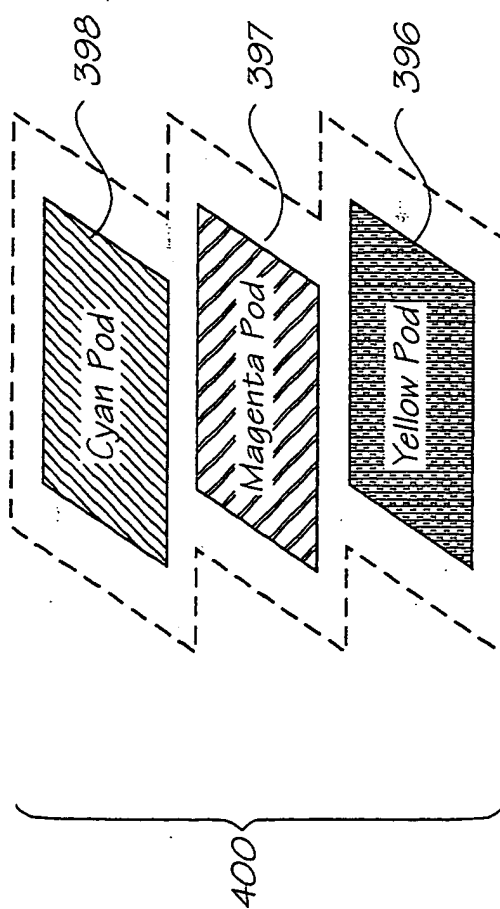


FIG. 92

67/81

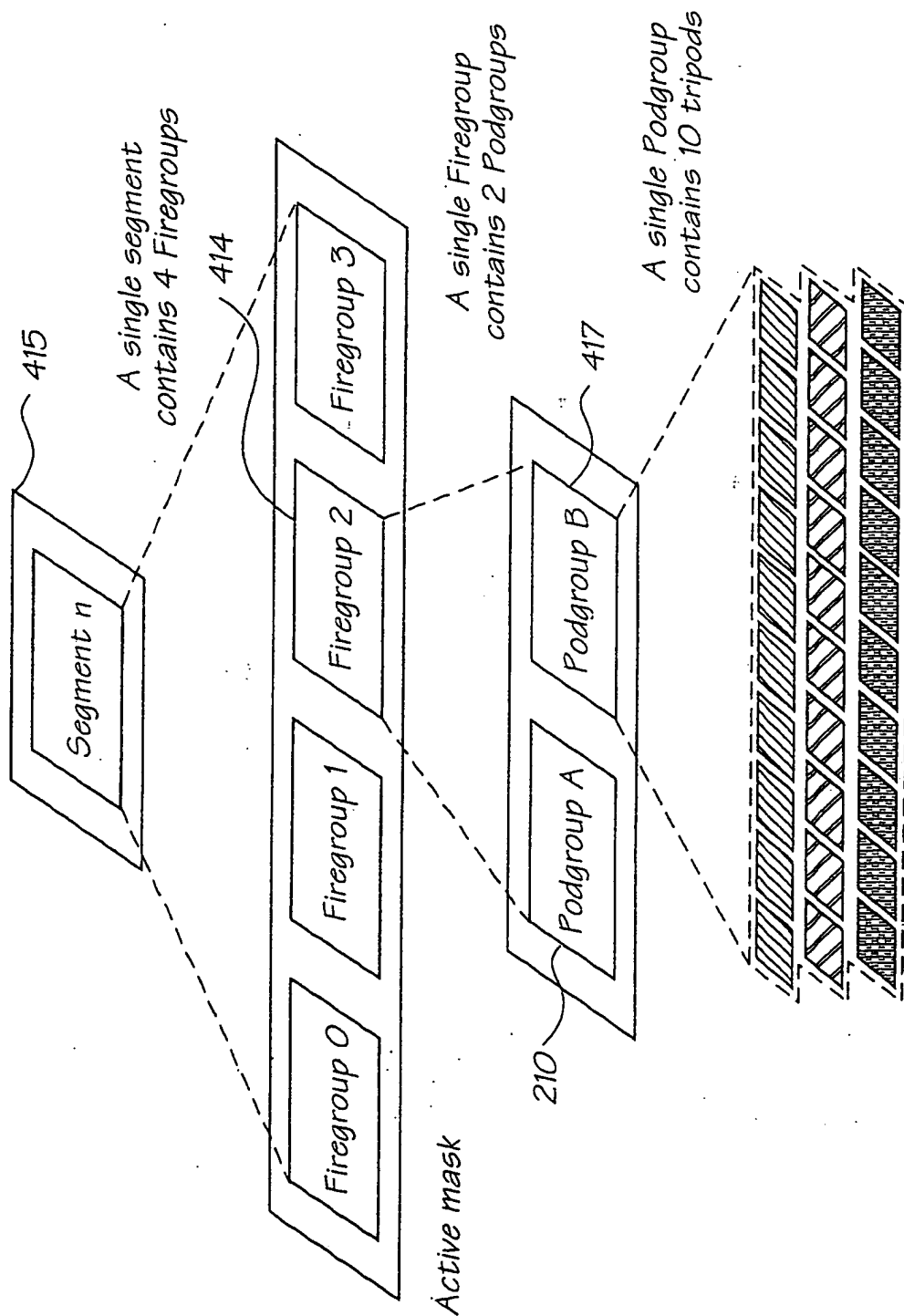


FIG. 94

68/81

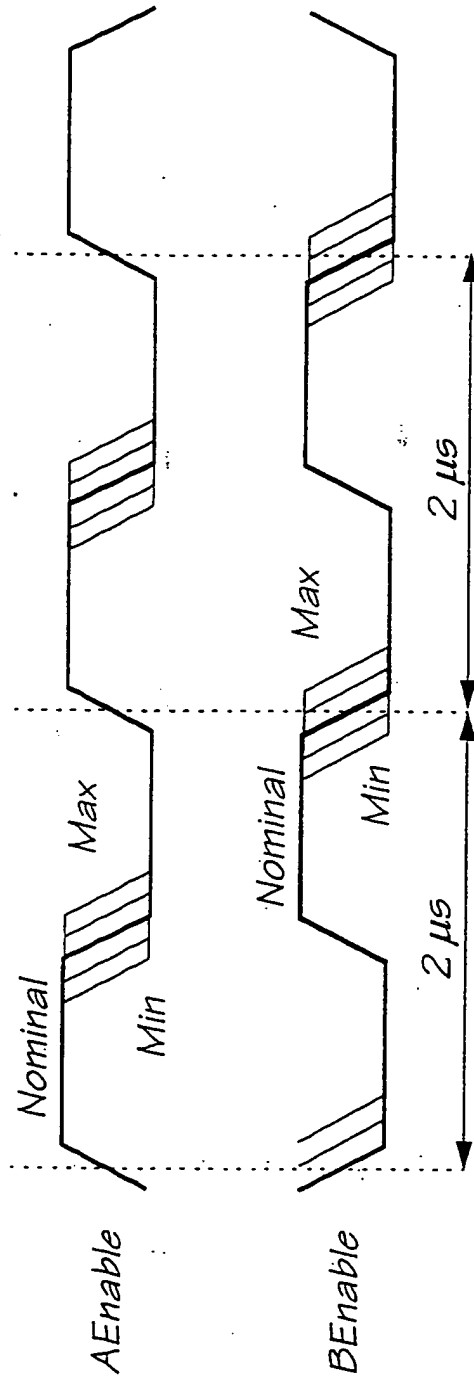
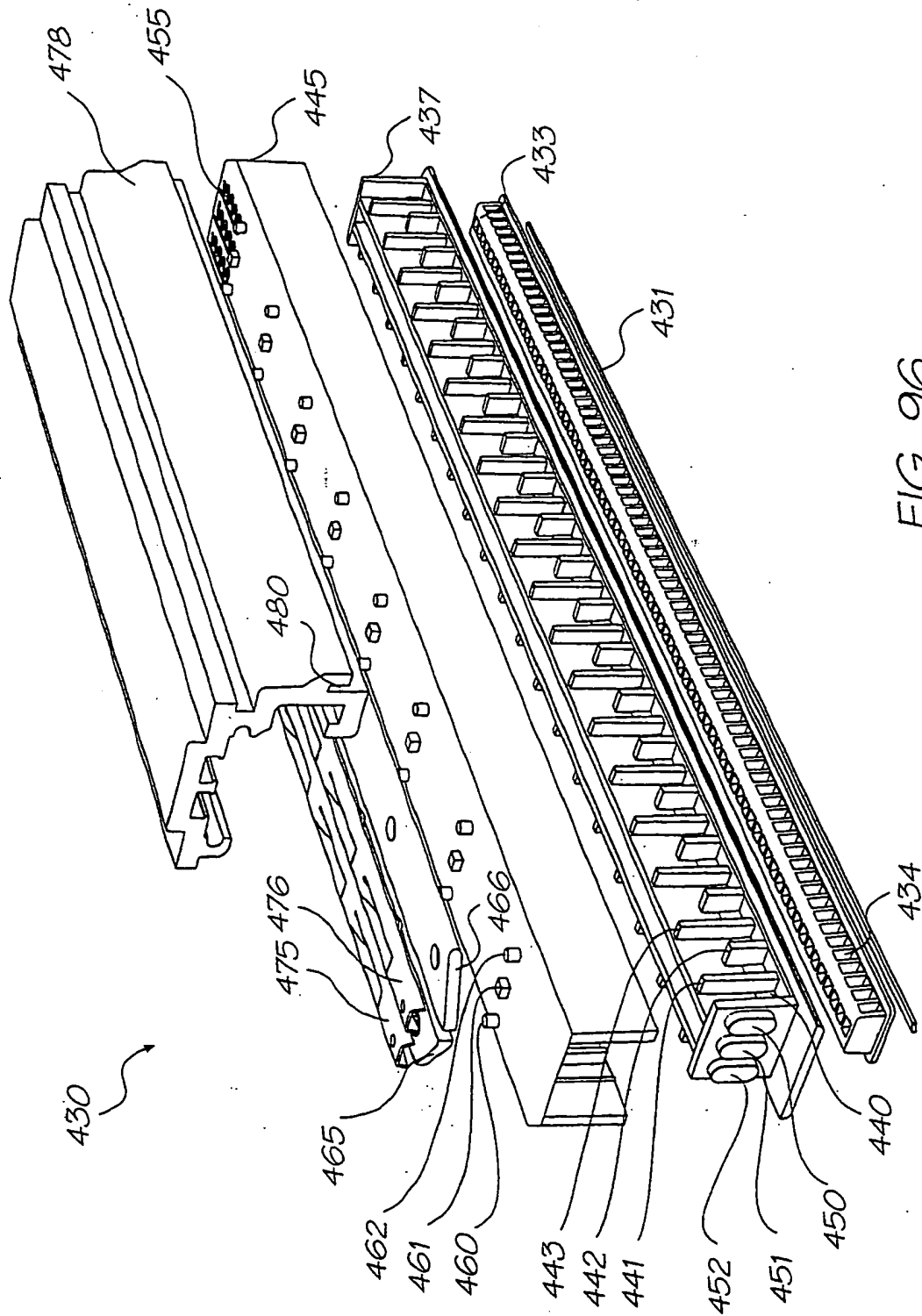


FIG. 95

69/81



70/81

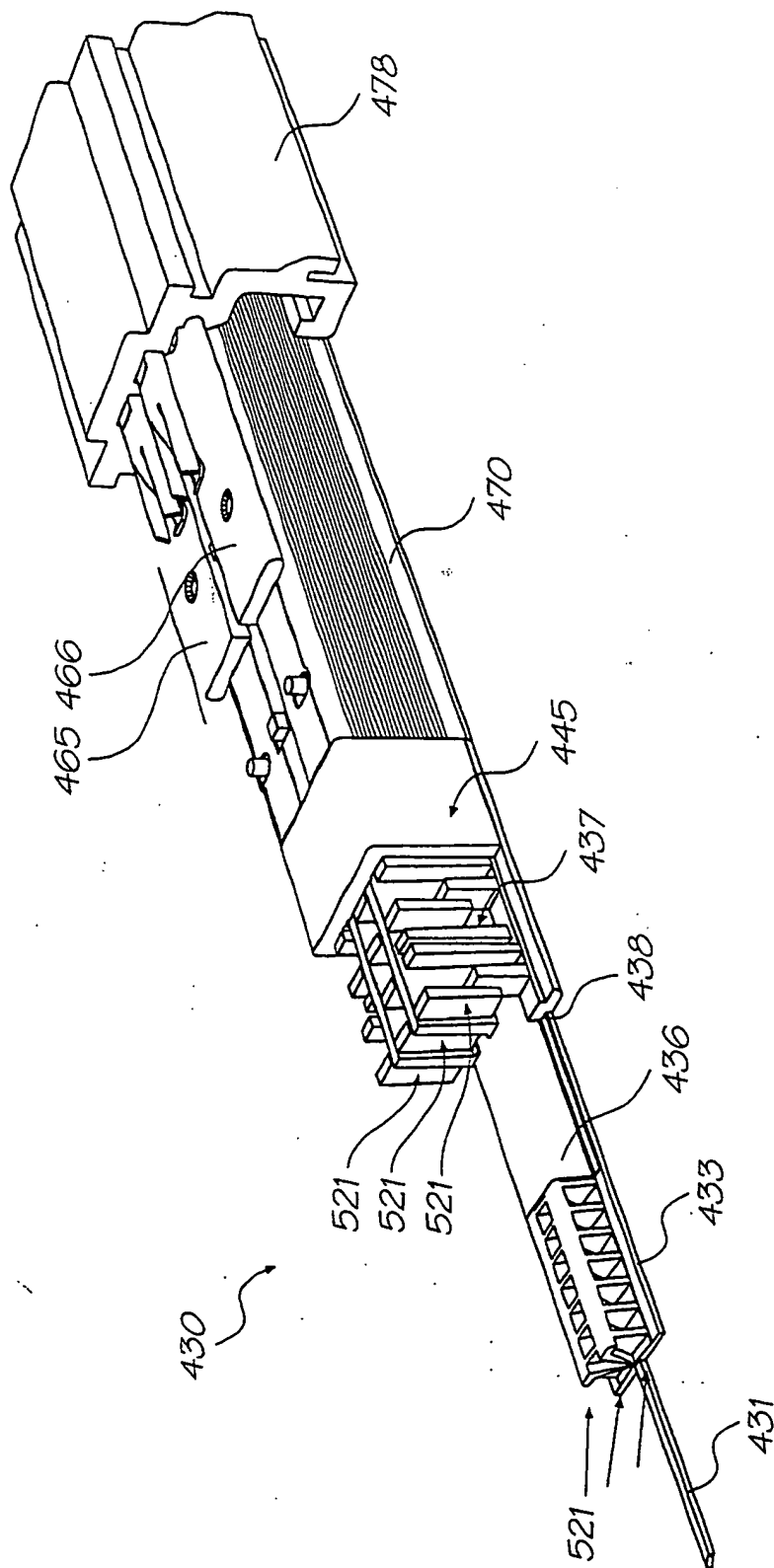


FIG. 97

71/81

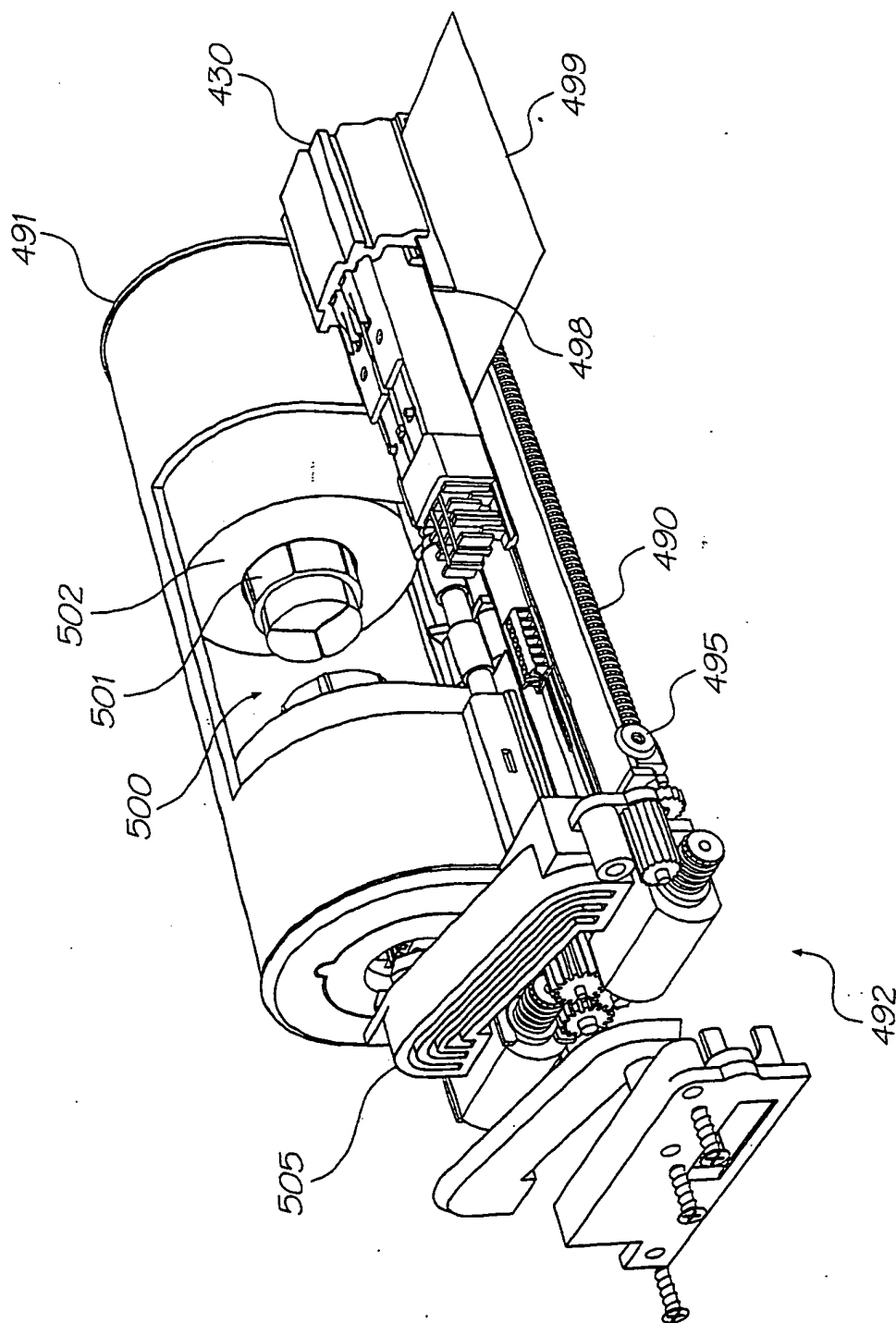


FIG. 98

FIG. 98

72/81

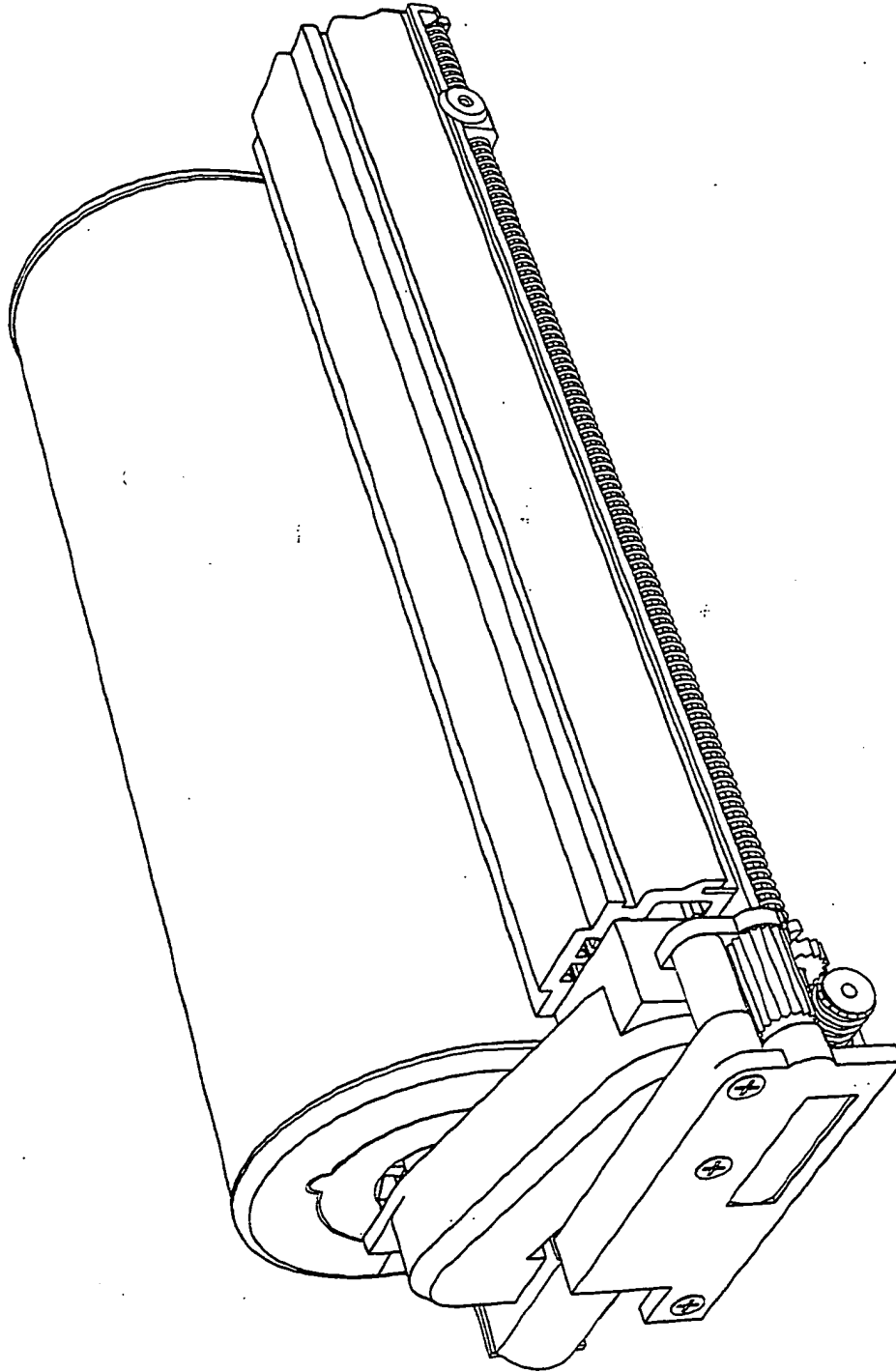


FIG. 99

FIG. 99



73/81

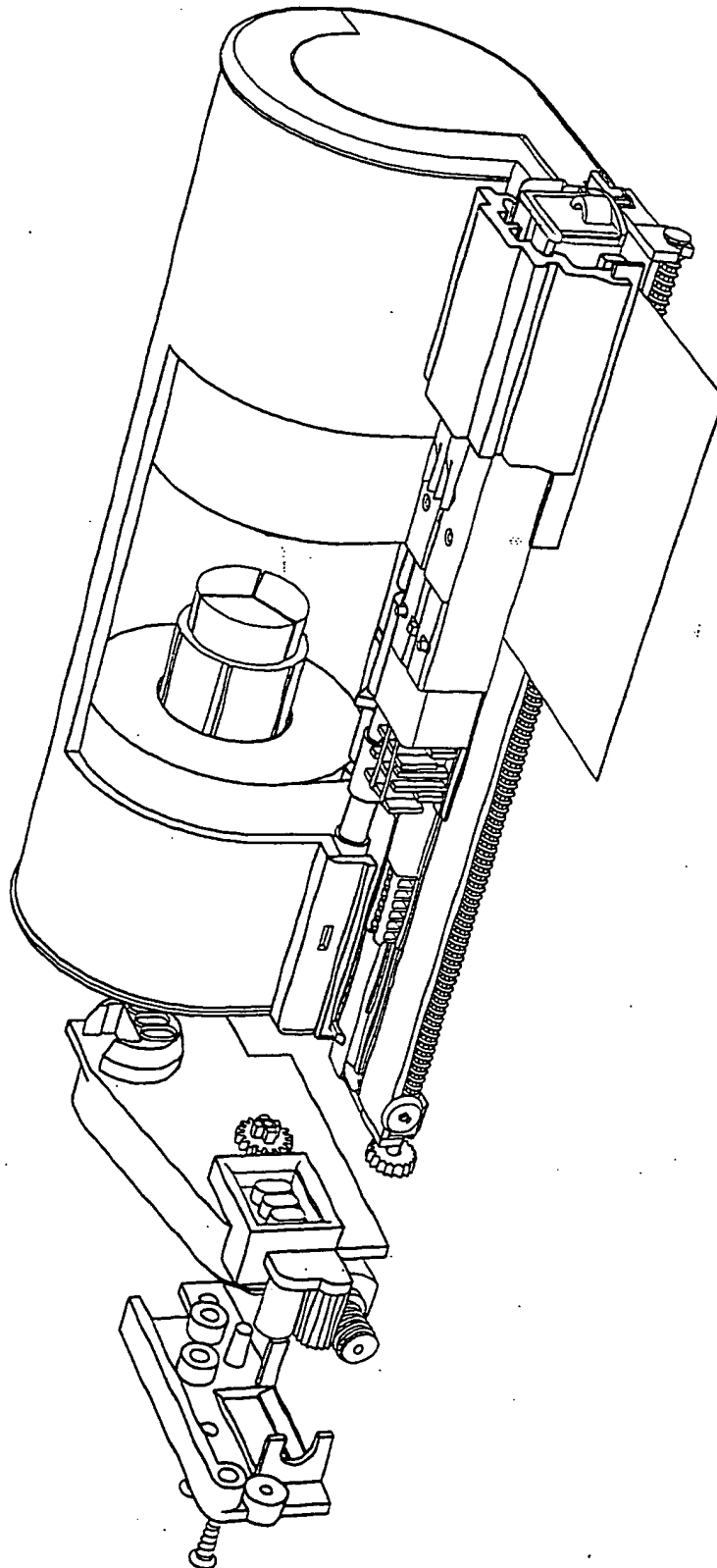


FIG. 100

FIG. 100

74/81

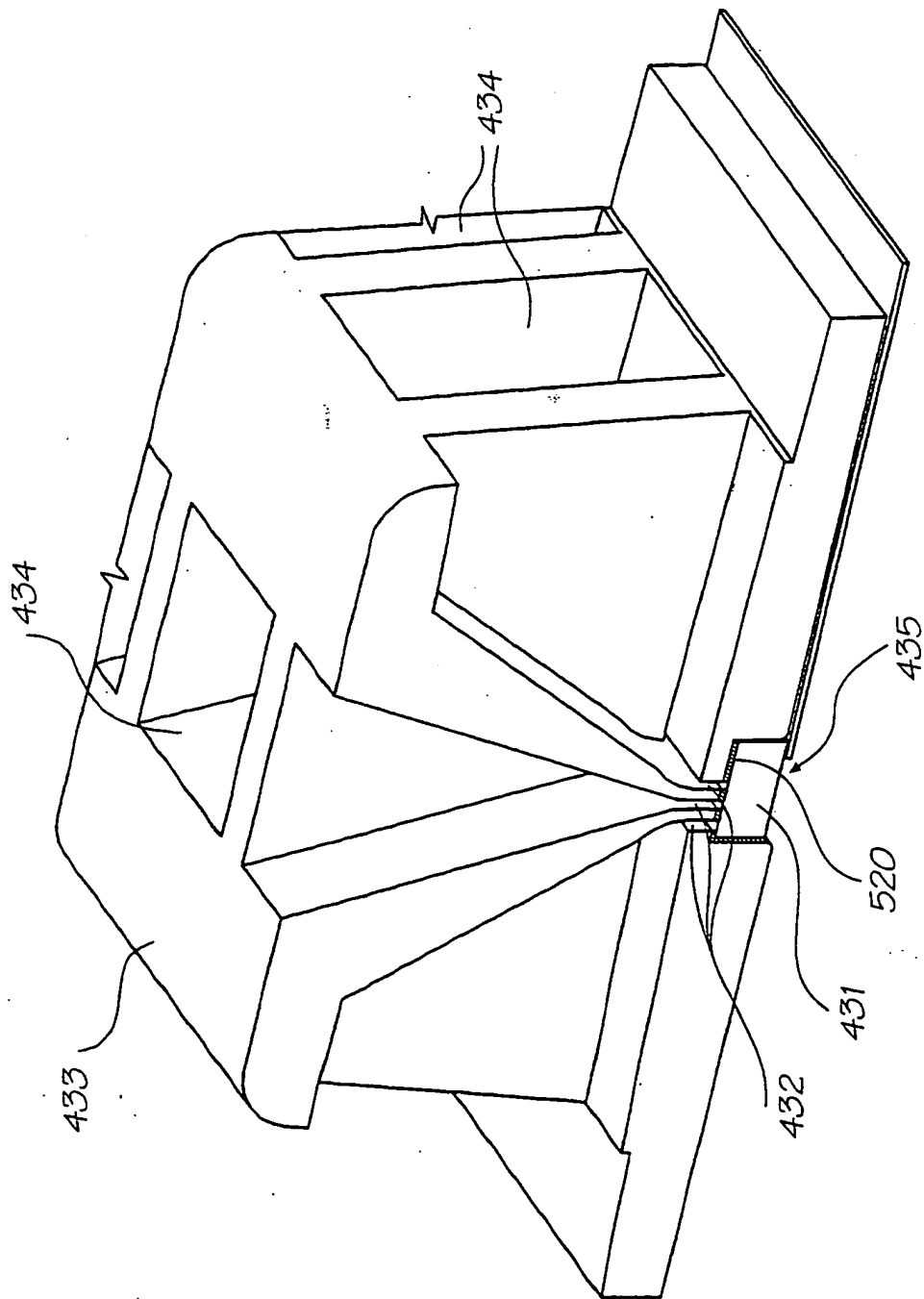


FIG. 101

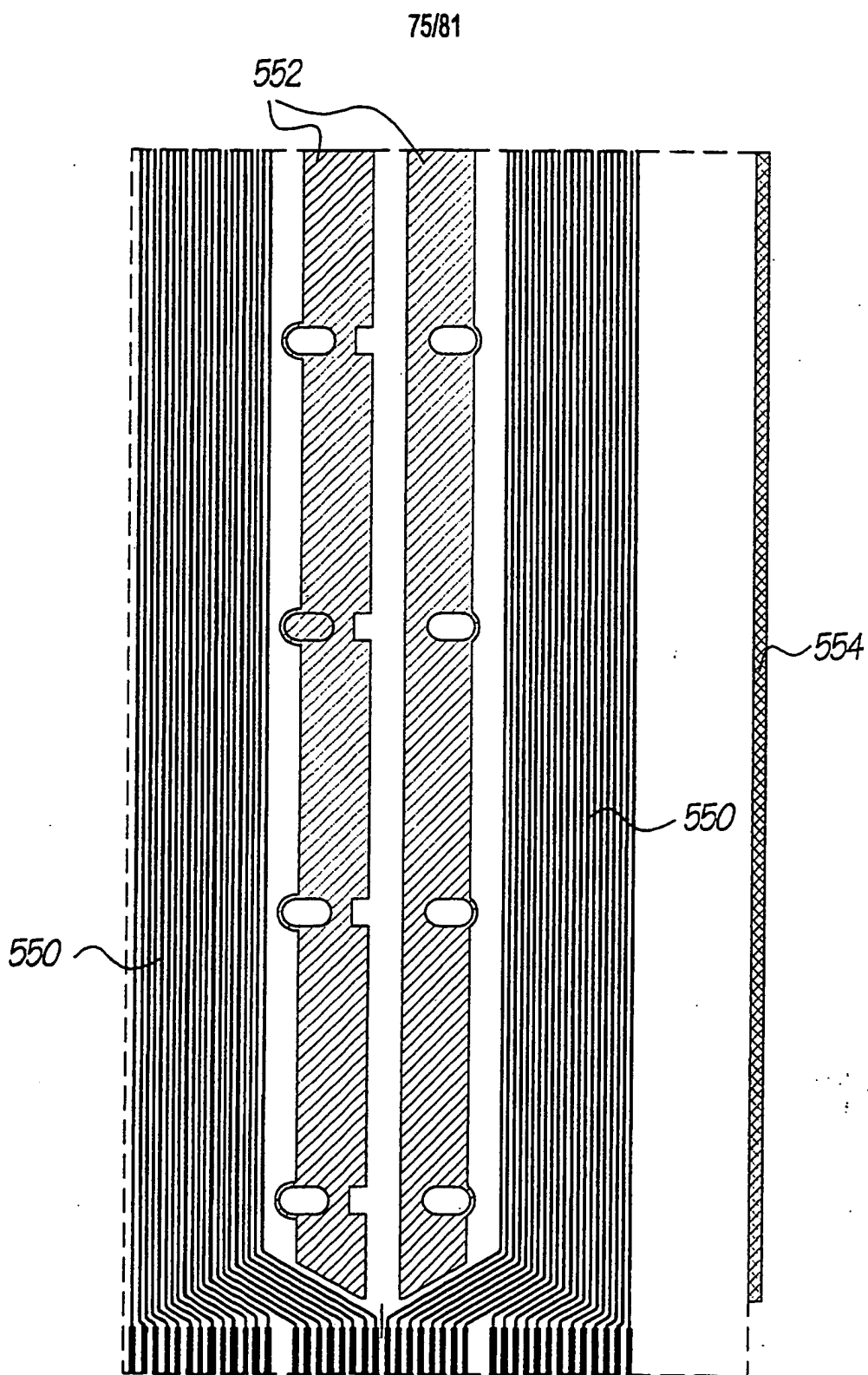


FIG. 102

76/81

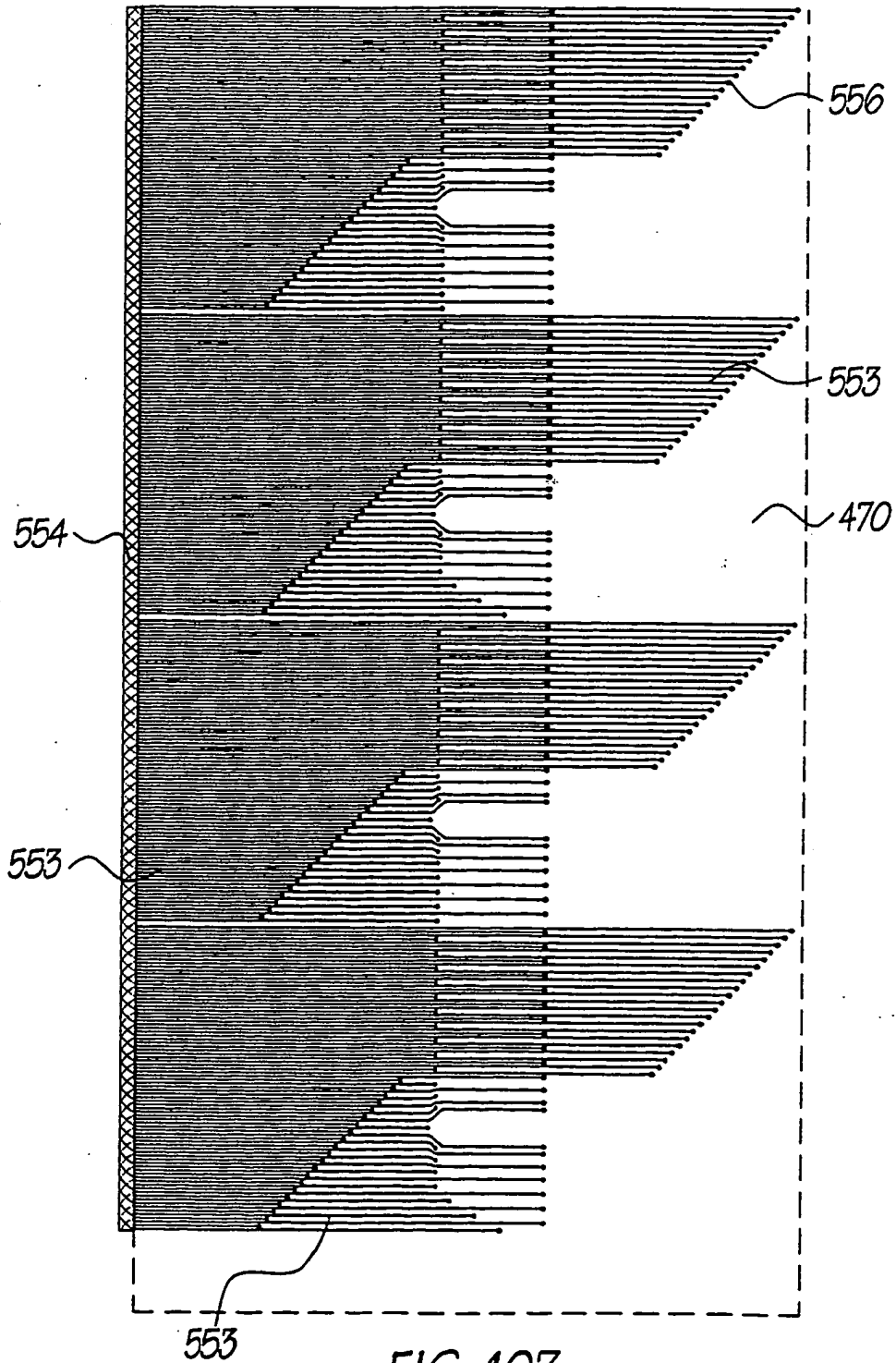


FIG. 103

FIG. 103

77/81

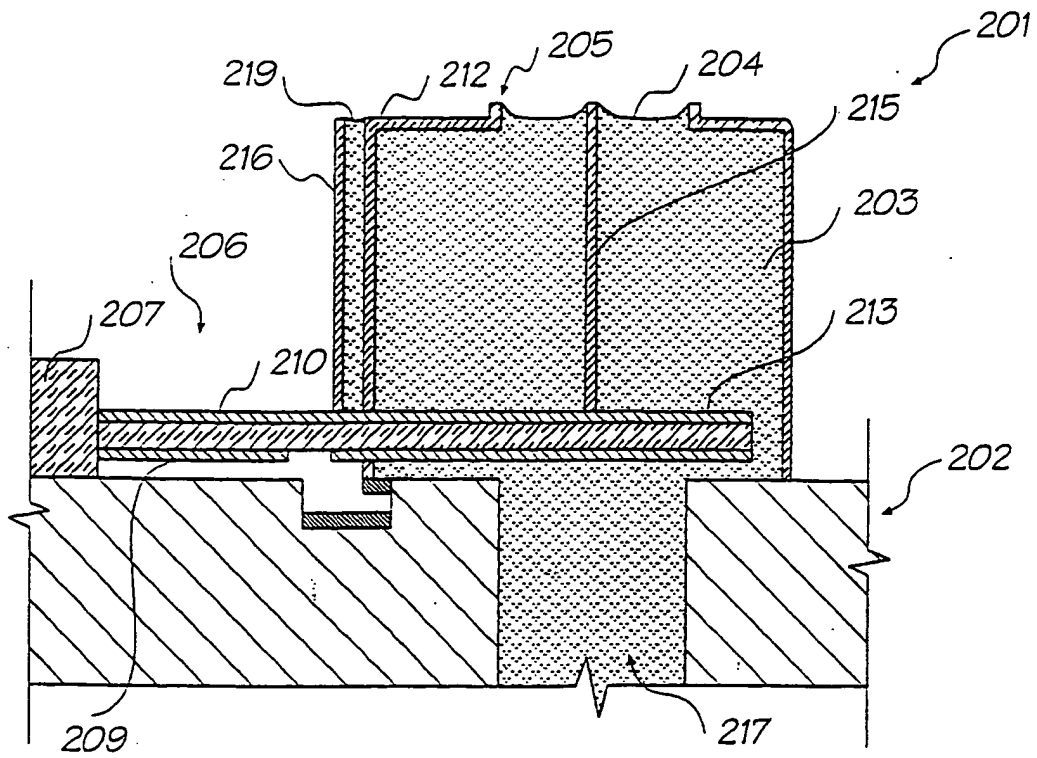


FIG. 104

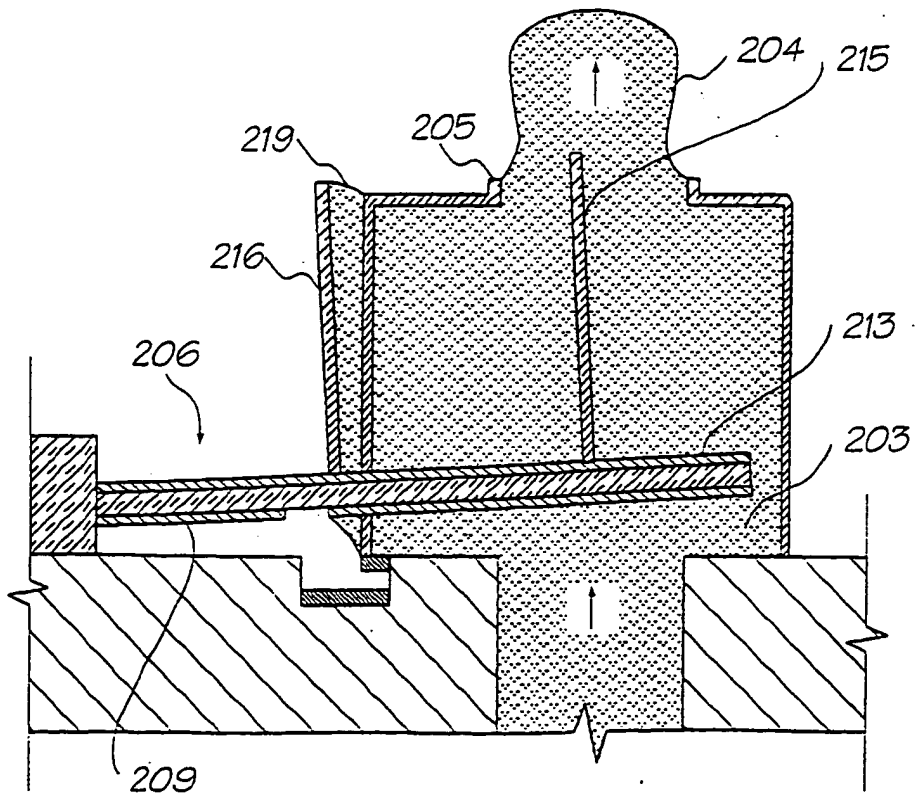


FIG. 105

78/81

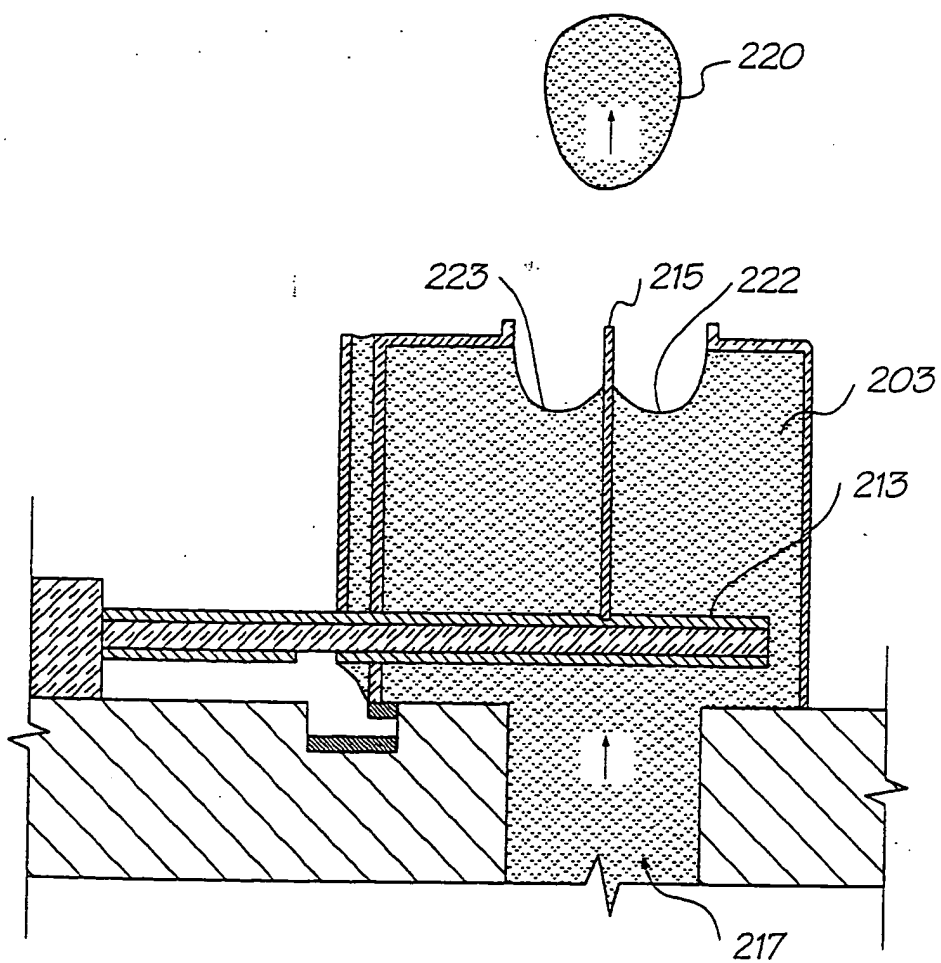


FIG. 106

79/81

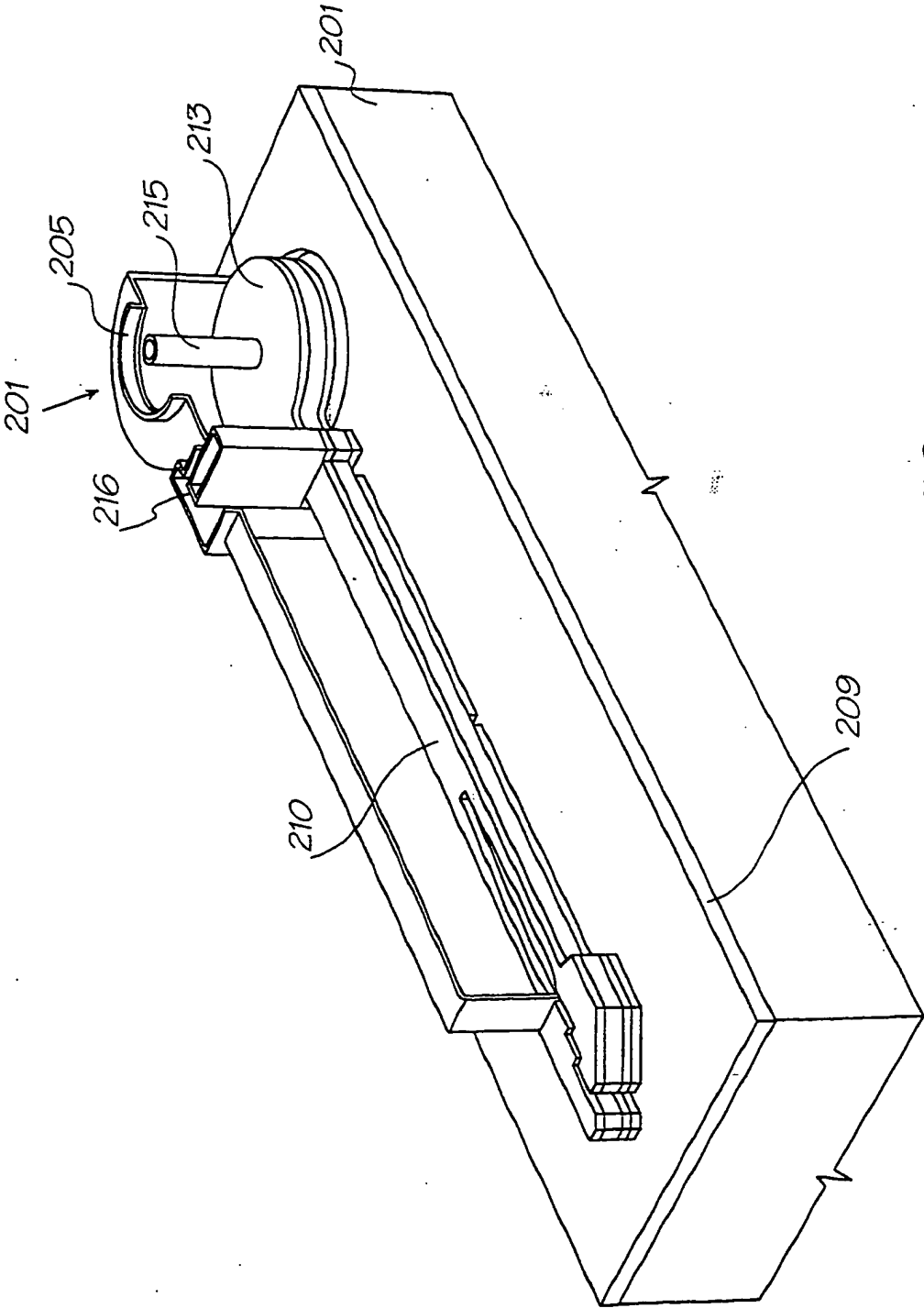


FIG. 107

FIG. 107

80/81

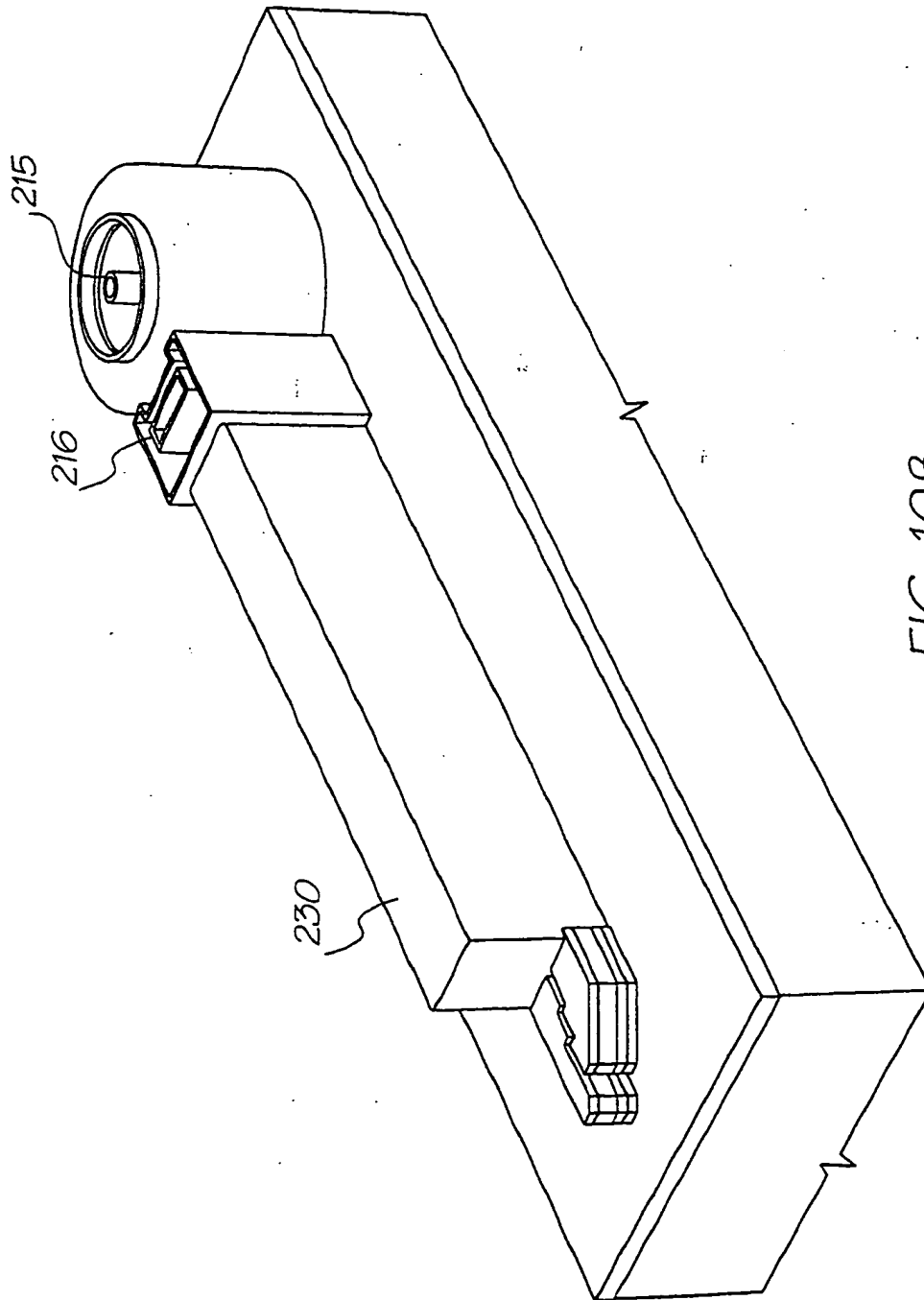


FIG. 108

FIG. 108 - PERSPECTIVE



81/81

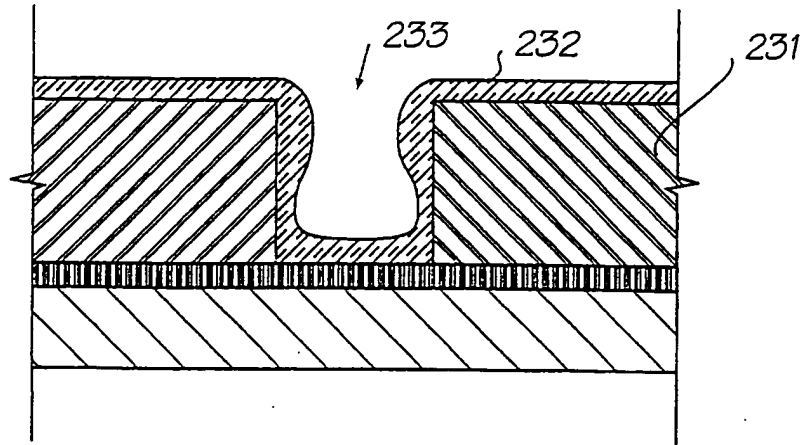


FIG. 109

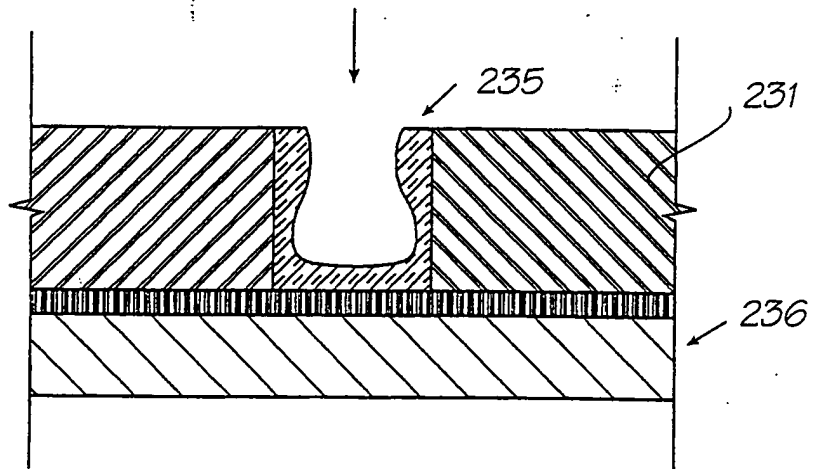


FIG. 110

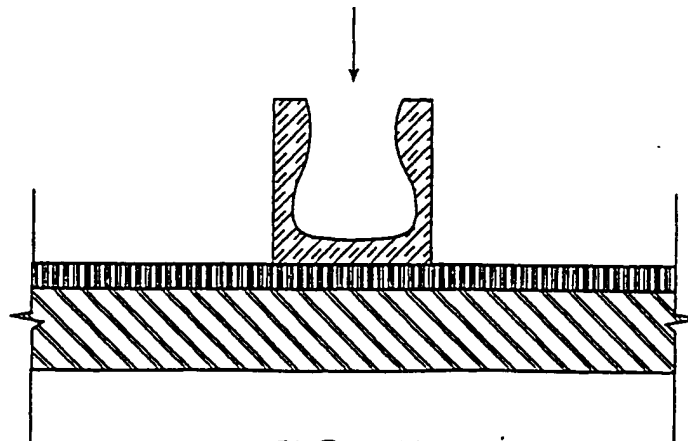


FIG. 111

FIG. 109